

INFO 64

ISSUE #5

2.95 U.S.
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← COMMODORE'S PLUS/4

A HARD LOOK AT A PERPLEXING MACHINE

PLUS/4 SWEEPSTAKES

WE REVIEWED IT. NOW YOU CAN WIN IT!!
(SEE INSIDE FOR DETAILS)

SPECIAL GAMES ISSUE

24 GAMES IN FULL COLOR!



REVIEWS

- 👍 KOALA LIGHT PEN
- 👍 INDUS DISK DRIVE
- 👍 EXODUS: ULTIMA III
- 👍 ROBOTS OF DAWN
- 👍 ANIMATION STATION
- 👍 PASCAL FOR THE 64

FEATURES

- 👍 WRITE YOUR OWN GAMES:
TIPS & TOOLS THAT
MAKE IT EASY!
- 👍 3 NEW ERGECARDS™
- 👍 NEW PRODUCTS FOR
YOUR COMMODORE 64
(THE FLOOD CONTINUES)
- 👍 NEWS & VIEWS



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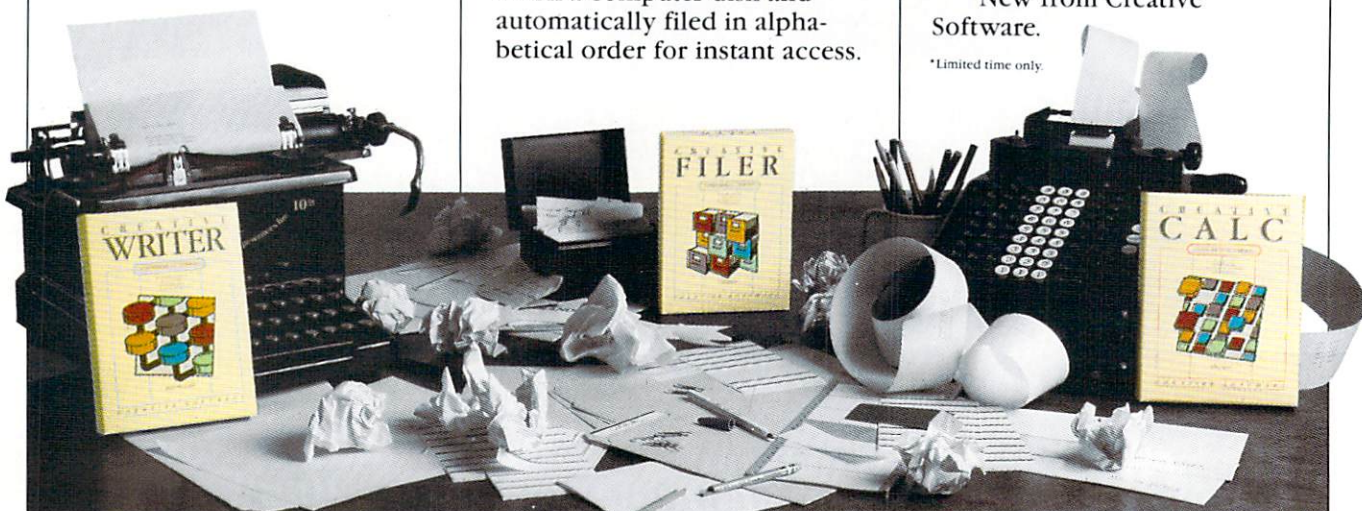
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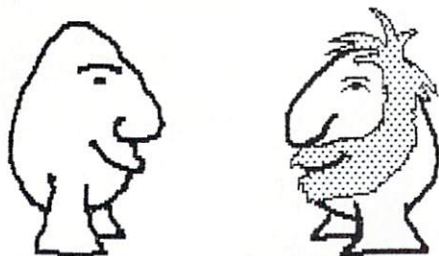
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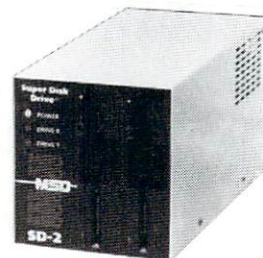
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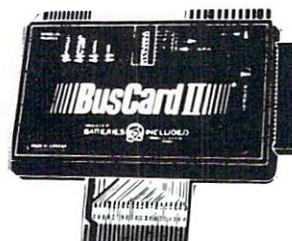
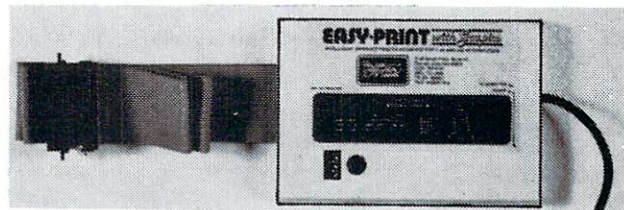
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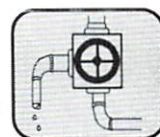
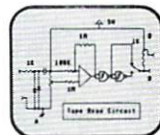
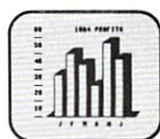


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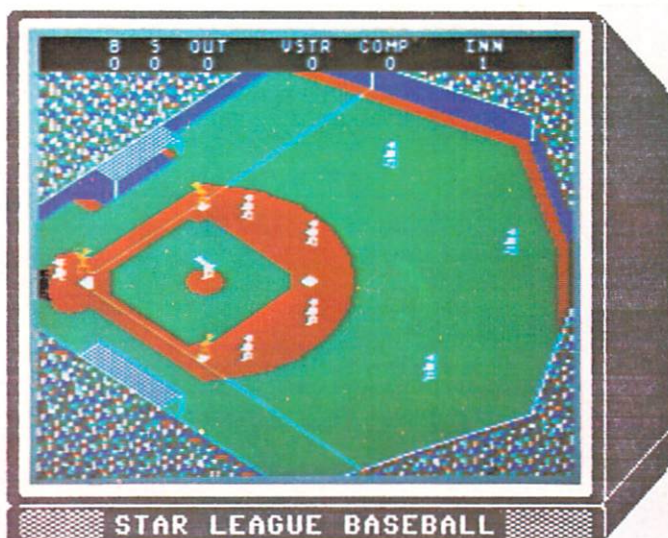
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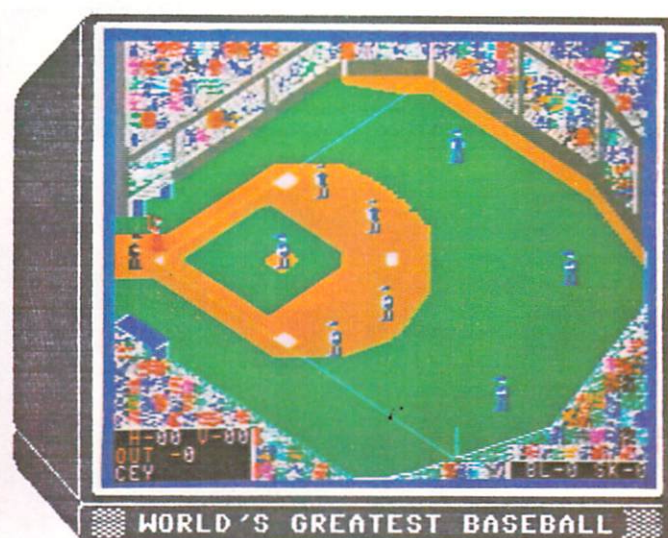
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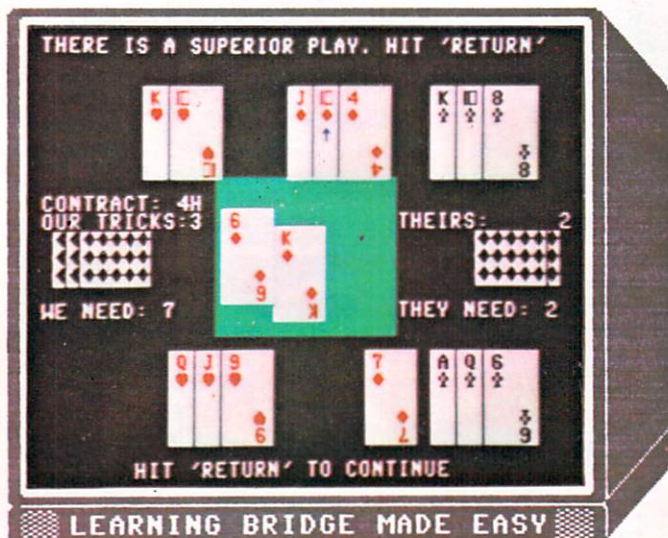
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CHARLES GOREN: LEARNING BRIDGE MADE EASY

DISK \$79.95 ****

CBS SOFTWARE (CBS)

LEARNING BRIDGE IS AT LEAST MADE EASIER, IF NOT EASY, SINCE CBS SOFTWARE AND CHARLES GOREN COLLABORATED ON THIS PACKAGE INCLUDING PLAYER'S MANUAL (136 PAGES) AND DISK. GOREN MAY BE THE BEST KNOWN NAME IN BRIDGE, AND THE PLAYER'S MANUAL STANDS BY ITSELF. THE PROGRAMS ON THE DISK PARALLEL THE MANUAL AND SERVE AS AN INTERACTIVE, HANDS-ON ILLUSTRATION. THIS IS THE PERFECT METHOD BY WHICH TO LEARN BRIDGE. WITH THE COMPUTER PLAYING THE OTHER THREE HANDS IN THE EXAMPLES, YOU HAVE A CAPTIVE BRIDGE PARTY AND GOREN HIMSELF AT THE TABLE TUTORING YOU AT YOUR OWN PACE.

ONE ON ONE

DISK \$40.00 ****

ELECTRONIC ARTS (ELE)

NO MATTER HOW GOOD LARRY AND JULIUS ARE, YOU HAVE TO WONDER HOW WELL BASKETBALL WILL TRANSLATE INTO A COMPUTER GAME. I FOUND THAT ALL ELEMENTS OF THE ONE ON ONE GAME HAVE BEEN INCLUDED THROUGH EXCELLENT PROGRAMMING. THE DIRECTION YOU MOVE YOUR JOYSTICK IS THE DIRECTION THE PLAYER MOVES ON THE COURT, A REFLEX ACTION REQUIRING NO GETTING USED TO. THE BUTTON CONTROLS JUMPING, SHOOTING, REBOUNDING, STEALING, BLOCKING, AND 180-DEGREE SPINS. YOUR SHOTS CAN BE FANCY: JUMP, TURN, PAUSE, THEN SHOOT. REBOUND YOUR OWN SHOT AND DUNK IT! INSTANT REPLAY ON GOOD MOVES.

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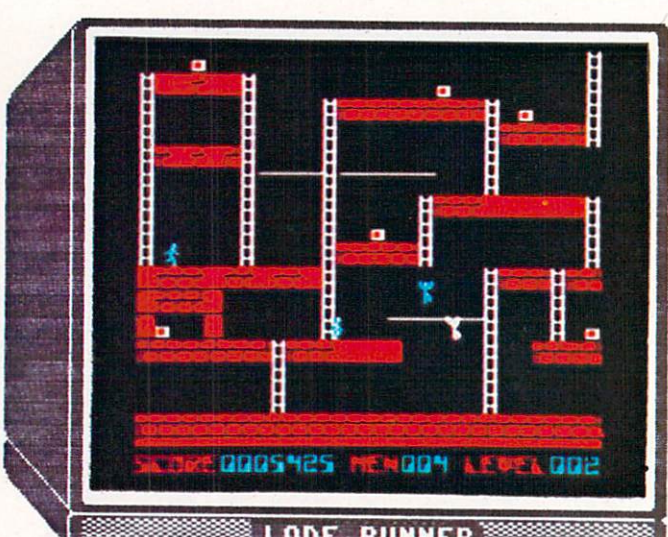
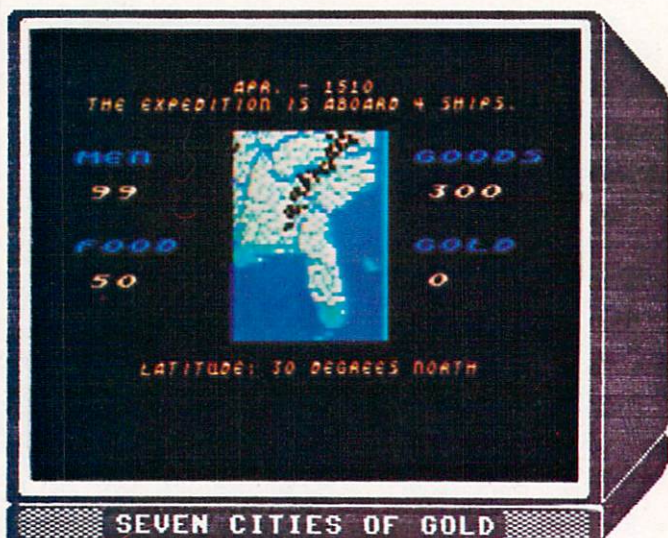
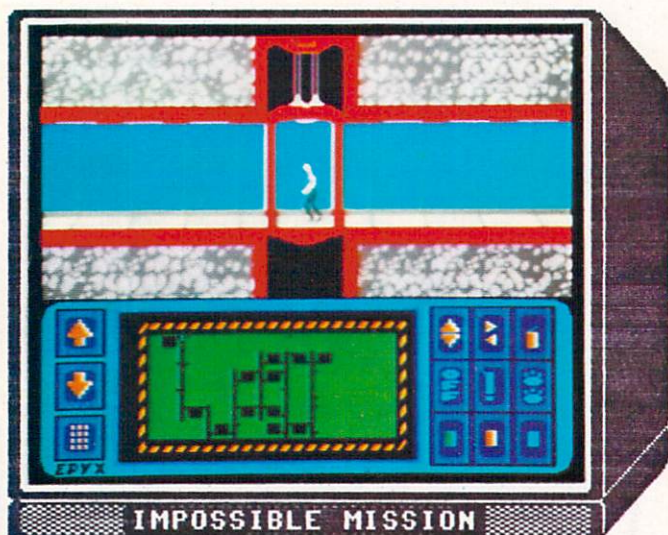
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SUMMER GAMES ADDS SOME DIMENSION TO THE OLYMPIC GAMES THEME. THE ELEMENT OF STRATEGY IS INCORPORATED INTO 4 OF THE 8 EVENTS IN A LIMITED WAY. A RESERVE ENERGY METER MAKES YOU PACE YOUR RELAY RUNNER. THE GYMNASTS CAN EARN MORE POINTS BY OPTING FOR A HARDER ROUTINE. STILL, THERE IS SOME WIGGLING AND JOYBUTTON TAPPING USED TO PROPEL ATHLETES ALONG. THE FIGURES ARE DRAWN WITH HIGHER RESOLUTION, BUT ARE NOT "INCREDIBLE" AS EPYX CLAIMS. A FLOATING SIGHT REPRESENTS THE SHOTGUN IN SKEET SHOOTING, AND DIVERS SEEM TO GO OFF THE SCREEN, NOT INTO THE POOL.

GALLERY



GALLERY

IMPOSSIBLE MISSION

DISK \$35.00 *****
EPYX COMPUTER SOFTWARE (EPY)

FOR THE FIRST FIFTEEN MINUTES YOU'LL SIT IN AWE OF THE LIFE LIKE MOVEMENTS OF THE HIGH RESOLUTION HERO RUNNING DOWN HALLS AND SOMERSAULTING OVER ENEMY ROBOTS. NEITHER IS THIS AN ANTICLIMAX OR A ONEDIMENSIONAL GAME. AT ITS HEART, IMPOSSIBLE MISSION USES THE CLASSIC VIDEO GAME STRUCTURE OF MULTIPLE ROOMS WITH CATWALKS, TOKENS TO COLLECT, AND LOTS OF ENEMY GREMLINS. BUT IMPOSSIBLE MISSION, ADDS TWO PUZZLE SOLVING GAMES TO THIS BASE AND ENHANCES IT WITH EXCELLENT GRAPHICS, SOUND, ROBOTS WITH INDIVIDUALITY, AND GREAT SOFTWARE VOICE SYNTHESIS.

SPY VS. SPY

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THE SEVEN CITIES OF GOLD

DISK \$40.00 *****
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ZAXXON

DISK \$34.95 *****
SYNAPSE (SYN)

ZAXXON HAS EARNED A PERMANENT PLACE IN THE ANNALS OF VIDEO GAMES, AND IT HAS BEEN SAID THAT THE COMMODORE 64 VERSION IS NOT ONLY THE MOST FAITHFUL REPRODUCTION OF THE ARCADE GAME, BUT MAY BE BETTER THAN THE ORIGINAL! I SAY ONLY ONE WHO HAS DROPPED A MONTH'S WAGES IN QUARTERS INTO A ZAXXON MACHINE WOULD KNOW FOR SURE. ZAXXON IS THE PIONEER GAME OF THE OVERHEAD-OFFSET-3-D VIEW OF THE ACTION, A DEPARTURE FROM THE STRAIGHT ON, TWO DIMENSIONAL DISPLAYS THAT DOMINATED THE EARLY INDUSTRY. NOW YOU CAN STOP SKULKING AROUND THOSE GAME HALLS, AND PLAY AT HOME.

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PROGRESSIVE PERIPHERALS & SOFTWARE (PRG)

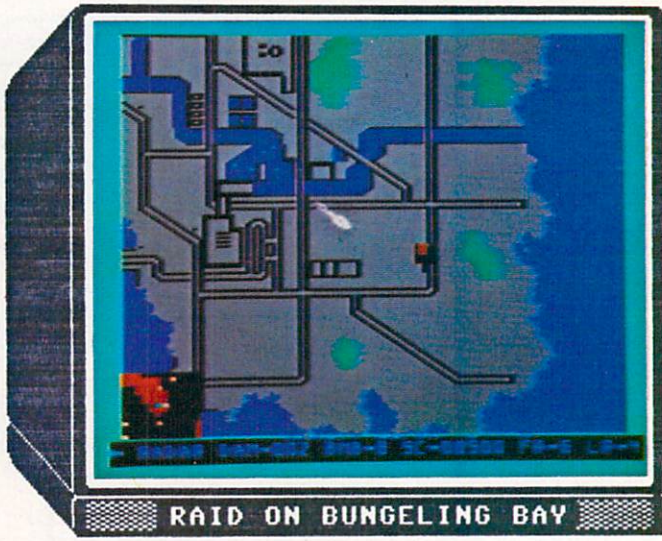
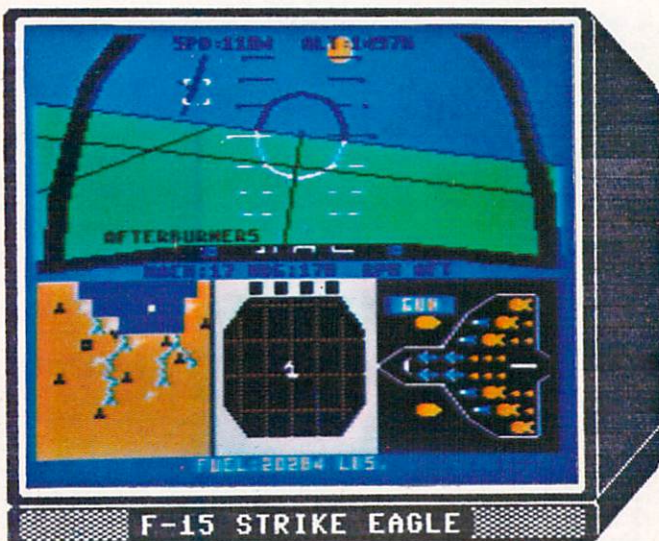
THIS IS NOT THE FIRST "ROPES & LADDERS" GAME TO HIT THE MARKET, BY ANY MEANS, (PRECEDED BY JUMPMAN, LODERUNNER, AND THEIR OFFSPRING) BUT IT IS PROBABLY THE BEST. SUPERIOR ANIMATION, SOUND EFFECTS, AND SCREEN THEMES OFFSET THE LACK OF CONCEPTUAL ORIGINALITY. WHEN YOU FINALLY TIRE OF THE FIFTY WELL-DESIGNED SCREENS INCLUDED ON THE DISK, YOU CAN TRY YOUR HAND AT DESIGNING YOUR OWN. THE CONSTRUCTION FEATURE IS EASY TO USE, AND GIVES COMPLETE CONTROL OVER GAME PARAMETERS. WIZARD IS EASILY PROGRESSIVE PERIPHERALS' BEST EFFORT TO DATE.

LODE RUNNER

DISK \$34.95 *****
BRODERBUND (BRO)

A TINY "GUMBI" LIKE FIGURE, THE LODERUNNER RACES ALONG CATWALKS AND CLIMBS LADDERS COLLECTING BUNGELING BOOTY AND ESCAPING GUARDS. LODERUNNER CARRIES A LASER TO SHOOT THROUGH THE FLOOR MAKING A TRAP FOR THE GUARDS OR AN ESCAPE ROUTE FOR HERSELF. FIRST APPEARING TO BE JUST ONE MORE VARIATION ON A CLASSIC THEME, L.R. HAS AN EDIT MODE ENABLING CONSTRUCTION OF YOUR OWN 150 SCREENS AND FOR POPULATING IT WITH GUARDS (UP TO 7). THE SLOW FADE OUT/IN CAN BE TOGGLED OFF FOR IMMEDIATE GAME RESET ELIMINATING THE ANNOYING DOWN TIME MOST GAMES IMPOSE ON YOU.

GALLERY



GALLERY

RAID OVER MOSCOW

DISK \$39.95 **+**
ACCESS SOFTWARE (ACC)

BRUCE CARVER AND ACCESS SOFTWARE HAVE FOLLOWED THEIR GAME BEACH HEAD WITH ANOTHER ENGROSSING MULTI-SCREEN CHALLENGE. THIS ONE IS HARDER. RAID OVER MOSCOW HAS FIVE ACTION SCREENS, SOME REQUIRING SKILLS SIMILAR TO THOSE NEEDED IN BEACH HEAD AND SOME UNIQUE. DO YOU TIRE OF REPEATEDLY SLOGGING THROUGH THE EARLY SCREENS ONLY TO REACH HIGHER LEVELS WITH A SMALL CREW AND LOSE TO INEXPERIENCE? RAID OVER MOSCOW ALLOWS YOU TO RELAX THROUGH THE DEMO MODE UNTIL THE LATER SCREENS APPEAR. MOVING THE JOYSTICK ACTIVATES GAME MODE AND YOU CAN PRACTICE THEM IN ADVANCE.

SONAR SEARCH

DISK \$39.95 ****
SIGNAL COMPUTER CONSULTANTS, LTD. (SIG)

A GOOD SUB GAME IS HARD TO CREATE, AND THIS ONE IS GOOD! AS THE COMMANDER OF A TRIO OF DESTROYERS, YOU GET THAT EERY FEELING WHEN YOU KNOW THEY ARE OUT THERE, BUT THE SONAR SIGNAL IS NOT RETURNING. YOU GET CLUES FROM SIGHTINGS, BUT THE SUBS ARE ALWAYS MOVING. WILL THEY GET PAST YOU AND TORPEDO THE UNARMED CONVOY? NOW YOU HAVE ONE SOUNDED! IS IT FIRING TORPEDOES, OR RUNNING? THE CHASE IS ON! THE HEADING CHANGES AND YOU MUST BE QUICK TO FOLLOW. WITH A SEPARATE SCREEN FOR EACH SHIP, AND MORE THAN ONE SUB TO FIND, THIS IS THE BATTLE OF THE BILGE!

STAR WARS

DISK \$44.95 **-**
PARKER BROS. (PAR)

INTRUDING INTO YOUR SPACESHIP'S RECTANGULAR VIEW SCREEN ARE FOUR LASER CANNONS--TWO FROM EACH SIDE. THE CANNONS DON'T MOVE. SHOTS ARE AIMED BY MOVING A SIGHT AROUND THE SCREEN. TARGETS INCLUDE OTHER SPACESHIPS WHICH LOOK LIKE GREEN BOW TIES AND CLOUDS OF GLOWING GASES. TWO MORE SCREENS. IN OTHER VIDEO GAMES, THE FIGURES MOVE UP THE SCREEN WHEN THE JOYSTICK IS PUSHED FORWARD, AND MOVE DOWN WHEN YOU PULL BACK. THIS GAME REVERSES THE UP-DOWN CONVENTION CREATING A COORDINATION PROBLEM. (POINTING THE TOP OF THE JOYSTICK AT THE SCREEN SEEMS TO HELP).

SAUCER ATTACK

DISK \$29.50 **+**
SACHS ENTERPRISES (SAC)

DON'T LET ONE NICE GRAPHIC SCREEN FOOL YOU INTO THINKING THERE ARE MORE. ONLY ONE OTHER SCREEN IS INCLUDED IN THIS GAME AND IT SHOWS ONLY A SLIGHTLY LARGER FLYING SAUCER, THE MOTHER SHIP, HOVERING IN SPACE. IN THE FIRST PART, THE SLOW MOVING PAIR OF SAUCERS BUZZING THE CAPITOL ARE A CHALLENGE TO SHOOT DOWN ONLY BECAUSE OF SLOPPY PROGRAMMING. THE MANUAL RECOMMENDS USING A HIGH QUALITY JOYSTICK, BUT DON'T ALLOW YOUR JOYSTICK TO BECOME THE SCAPEGOAT. IF YOU WIN THE GAME, THE CAPITOL SCENE RETURNS WITH A SMALL FIREWORKS DISPLAY IN THE SKY, AN ANTICLIMAX.

F-15 STRIKE EAGLE

DISK \$34.95 *****
MICROPROSE SOFTWARE (MPS)

"WILD BILL" STEALEY AND MICROPROSE SOFTWARE HAVE CREATED A CAPTIVATING GAME EXPERIENCE: FLYING A FIGHTER BOMBER. NOT AS FINICKY AND CRASH PRONE AS SOME FLIGHT PROGRAMS CENTERED AROUND TAKING OFF AND LANDING, THIS PLANE IS CONSIDERED RETURNED TO BASE IF YOU JUST COME CLOSE. THE REAL ACTION AND PLEASURE OF THIS GAME IS COMBAT FLYING, BOMBING, AND DOG FIGHTING. YOU WILL FILL IN WITH IMAGINATION WHAT THE LANDSCAPE LACKS IN DETAIL BECAUSE THE HEADS UP DISPLAY IS STATE OF THE ART, THE COCKPIT IS DETAILED, AND THE ACTION IS CONVINCING. (FOUR SKILL LEVELS).

RAID ON BUNGELING BAY

DISK \$29.95 ****
BRODERBUND (BRO)

THE ENEMY TERRITORY COVERS 100 SCREENS' AREA. EACH OF SIX ISLAND FACTORIES KEEPS REBUILDING ITSELF AND KEEPS BUILDING THE WAR MACHINE UNTIL IT AND EVERY SUPPLY BOAT COLOR CODED TO IT IS DESTROYED. YOU CARRY NINE BOMBS AND YOUR GUNS NEVER RUN OUT OF AMMO. MORE BOMBS AND REPAIRS ARE OBTAINED FROM YOUR AIRCRAFT CARRIER BASE. IF TANKS AND ANTIAIRCRAFT GUNS DON'T STOP YOU, FIGHTER PLANES WILL BE DISPATCHED AND HEAT SEEKING MISSILES WILL BE SUPPLIED TO THE GUNNERS. IS STRAFING, BOMBING, AND AIR COMBAT YOUR FAVORITE PASTIME? THIS IS YOUR GAME!

GALLERY



You're in front of a darkened doorway. It seems to be the main entrance.

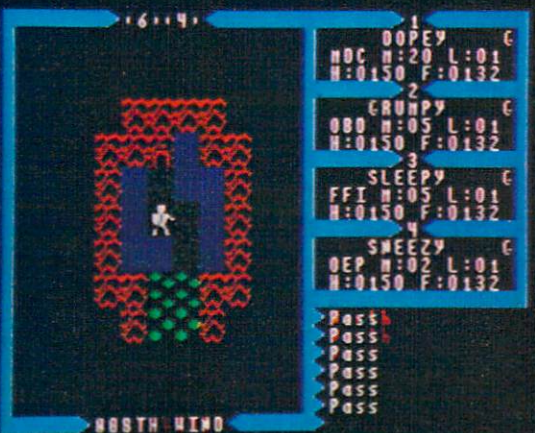
OK>ENTER DOORWAY

MASK OF THE SUN



EVERYONE STARTS HOWLING IN UNISON.

THE INSTITUTE



EXODUS: ULTIMA III



PRINCE LEROY

STATUS:
WEAKER

HITS: 10
EXPERIENCE: 8
GOLD: 23

MAGIC SPELLS: 1
CLERIC SPELLS: 1

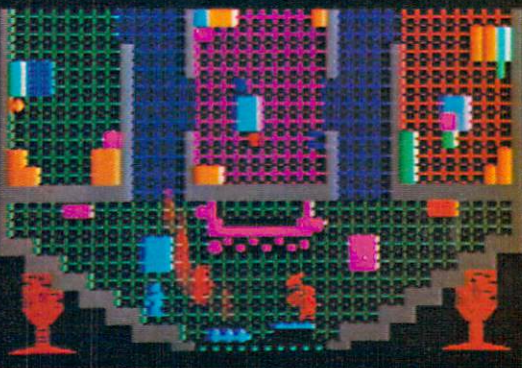
LANCELOT IS SHARPENING HIS SWORD.
2 SHARPENING ZOMBIES KILL YOU

THE STANDING STONES

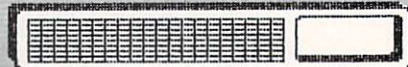
?w
You are in a large garage. An elevator, an airfoil and a contact strip are here. Daneel is here.
?press strip
Nothing happens. (You were expecting another elevator to show up?)
?examine airfoil
It looks like a vehicle without wheels.
?enter airfoil
A robot moves out from a niche in the wall and opens the airfoil door for you. After you climb in he gets in up front and the doors close with a soft, sighing hiss. The windows blank out and a soft, artificial light suffuses the interior.
You are in the small, enclosed interior of an airfoil, surrounded by soft upholstery. There are doors on each side. Daneel is here.
The robot says, "Where do you wish to go?"
?u

ROBOTS OF DAWN

Suspect: Hester Pryme
Question Ignore Accuse Suspect



MURDER ON THE ZINDERNEUF



GALLERY

THE MASK OF THE SUN

DISK \$39.95 ****-
BRODERBUND (BRO)

JUMP INTO YOUR JEEP WITH YOUR FAITHFUL COMPANION, RAUL, AND YOU'RE OFF TO THE JUNGLE TO SEARCH FOR TREASURE AMONGST THE ANCIENT RUINS. THIS ADVENTURE GAME STANDS OUT MOSTLY FOR ITS GRAPHICS, WHICH NOT ONLY INCLUDE WELL-DRAWN STATIC SCENES, BUT ALSO SOME FAIRLY REASONABLE ANIMATION. THE ANIMATION SEQUENCES ARE SOMETIMES OVER-DONE (MOST NOTEABLY THE DRIVING SEQUENCES WHICH GO ON & ON. CHILDREN, ESPECIALLY, WILL LIKE MASK OF THE SUN. IT IS VISUAL, EASY TO GET INTO, AND THE RIDDLES ARE JUST HARD ENOUGH TO CHALLENGE WITHOUT INDUCING TERMINAL FRUSTRATION.

THE INSTITUTE

DISK \$29.95 ****
SCREENPLAY (SCR)

NO JOYSTICK IS USED IN THIS GAME. YOUR MOVES ARE ENTERED IN TEXT FORM, AND THE REPLY IS OFTEN ONLY A TERSE SENTENCE. THE GOAL IS TO GET OUT OF THE MENTAL INSTITUTION WHERE YOU HAVE BEEN UNJUSTLY COMMITTED. A FEW SUGGESTIONS FROM THE MANUAL WILL GET YOU STARTED IN THIS EFFORT, BUT SOME IMAGINATION WILL BE REQUIRED TO GET BEYOND THE FIRST HALLWAY. THE GAME IS SAID TO HAVE A LARGE VOCABULARY, SO TRY ANYTHING. WHILE THE PROGRAM PARAMETERS LISTED ON THE BOX CLAIM "GRAPHICS ORIENTED", THE SCREENS COULD BE EFFECTIVELY REPLACED BY DESCRIPTIVE TEXT.

EXODUS: ULTIMA III

DISK \$59.95 *****
ORIGIN SYSTEMS (ORS)

AS IN CHESS, THE GAME "PIECES" IN EXODUS: ULTIMA III ARE BETTER AT SOME THINGS, POORER AT OTHERS. YOU ASSEMBLE FOUR ADVENTURERS, AND THEN ROAM A STRANGE, ENCHANTED LAND. DOCUMENTATION IS MYSTERIOUS, TOO, PROVIDING ONLY BARE ESSENTIALS AND TRYING TO SOUND ANCIENT WITH "THEE", "THOU", AND "THY LIVING MACHINE" (YOUR DISK DRIVE). SET ASIDE A FEW HOURS TO GAIN THE LEVEL OF UNDERSTANDING NEEDED TO PLAY WELL. ONCE MASTERED, EXODUS: ULTIMA III SHOULD PROVIDE HOURS OF PLAY. YOU CAN SAVE GAMES IN PROGRESS, THEN PLAY ON AND/OR COME BACK. SEE REVIEW, THIS ISSUE.

THE STANDING STONES

DISK \$40.00 ****+
ELECTRONIC ARTS (ELE)

NOT UP TO ELECTRONIC ARTS' USUAL QUALITY, THE SCREENS CONSIST OF THE STANDARD HALLWAY LABYRINTH DRAWN WITH STRAIGHT, CONVERGING LINES, AND CREATURES DRAWN WITH CHARACTER GRAPHICS. THE CHARACTERISTICS OF THE EXPLORER ARE DETERMINED AT RANDOM. IT LOOKS LIKE MUCH OF THE EFFORT WENT INTO THE PACKAGING, THE TITLE SCREEN, AND THE TRANSLATION INTO OLD ENGLISH. (CANST THOU TOGGLETH?) STILL, THERE IS AN ADVENTURE HERE. YOU MUST DRAW A MAP AS YOU GO WITH SYMBOLS FOR ONE WAY, TWO WAY, AND SECRET DOORS. YOU MUST GO IN AND OUT TO RESTORE YOUR STRENGTH AND POWERS.

ROBOTS OF DAWN

DISK \$40.00 ****
EPYX COMPUTER SOFTWARE (EPY)

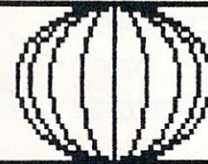
ALL TEXT AND NO GRAPHICS DOES NOT MAKE ROBOTS OF DAWN A DULL GAME. WHILE BASED ON THE BOOK BY ISAAC ASIMOV, THE PLOT CHANGES SOMEWHAT FOR EACH GAME. (WILL SCIENCE FICTION WRITERS BECOME GAME DESIGNERS THE WAY MUSICIANS HAVE BECOME VIDEO STARS?) ROBOTS OF DAWN COLOR CODES THE INFORMATION ON THE SCREEN MAKING IT EASY TO DISTINGUISH THE SOURCE AND THE TYPE OF INFORMATION SHOWN. DOCUMENTATION IS SPARCE, BUT THE VOCABULARY OF THE GAME SEEMS TO BE LARGE. THOUGHTFUL PROGRAMMING IS EVIDENT IN THE RESPONSES TO PLAYER INPUT. SEE THE REVIEW THIS ISSUE.

MURDER ON THE ZINDERNEUF

DISK \$40.00 ****
ELECTRONIC ARTS (ELE)

THE DISPLAY CONSISTS OF THE FLOOR PLAN OF THE AIRSHIP ZINDERNEUF WHICH SCROLLS ACROSS YOUR MONITOR VERTICALLY. THERE ARE SIXTEEN PASSENGERS (ONE DEAD) EACH WITH HIS/HER OWN TRAITS, AND SIXTEEN CABIN ROOMS WITH FURNISHINGS. YOU ADOPT THE PERSONALITY OF ONE OF EIGHT FAMOUS DETECTIVES FOR THE GAME DEPENDING ON THE APPROACH YOU WANT TO TAKE IN QUESTIONING SUSPECTS. WANDER FREELY AROUND THE SHIP, LOOK FOR CLUES, BUMP INTO OR AVOID PEOPLE DEPENDING ON IF YOU WANT TO TALK TO THEM, AND AFTER YOU HAVE ADEQUATELY DEVELOPED YOUR CASE, YOU CAN MAKE YOUR ACCUSATION!

READER MAIL



Dear Dunningtons:

I HAD NEARLY DESPAIRED OF EVER SEEING ANOTHER ISSUE OF INFO-64, WHEN IT APPEARED ON MY newsstand THIS MORNING! I WAS AFRAID THAT YOU HAD JOINED "OPTIMIZER 64" (ISSUE #3) IN THE RIP-OFF CATEGORY. INSTEAD, I FIND THAT YOU WERE MOVING FROM AUBURN, WA TO IOWA CITY. MY GOD, IOWA CITY! WHY NOT WEST BRANCH?

JOKING ASIDE, I ENJOY YOUR OPINIONATED AND APPARENTLY ACCURATE REVIEWS. I EVEN LIKE THE **ERG-BOARD**, EVEN THOUGH THE HOLES IN THE BOTTOM DON'T FIT MY 64'S. THUS I'M ENCLOSING MY CHECK FOR 4 ISSUES, AND FOR A BACK ISSUE.

STAY HEALTHY.

UP WITH **BOILERMAKERS**, DOWN WITH **HAWKEYES**!

SINCERELY YOURS,

-RICHARD C. SANBORN
INDIANAPOLIS, INDIANA

GENTLEMEN:

FIRST LET ME SAY THAT YOUR MAGAZINE IS OF TREMENDOUS VALUE TO THOSE OF US JUST STARTING TO USE A COMPUTER. I PURCHASED **SUPERBASE-64** AFTER READING ABOUT IT AND SEEING YOUR REVIEW, AND IT HAS HELPED ME COMPUTERIZE A LARGE SEGMENT OF MY BUSINESS. YOUR DIRECTNESS ABOUT PRODUCTS IS NEEDED IN ALL SEGMENTS OF OUR SOCIETY. UNBIASED, AND TOUGH OPINIONS ARE INDEED WELCOME TO THIS READER.

BY THE WAY, I AM WRITING THIS WITH **SPEEDSCRIPT**, A WORD PROCESSOR FROM **COMPUTE!'S GAZETTE**. IT'S NOT BAD.

WILL YOU PLEASE TRY TO GET THE NEW **INDUS** DISK DRIVE FOR THE 64, AND REVIEW IT. I UNDERSTAND THAT IT IS 100% ACCURATE ON ALL SOFTWARE FOR THE 64.

AGAIN THANK YOU.

SINCERELY,
-SCOTT SHUKAT
NEW YORK, NY

Dear Richard:

We looked at a house in West Branch, but found a better place in Iowa City that had a 20' X 20' chicken coop on the property (this is now the international headquarters for INFO-64). As for the holes on your **ERG-BOARD**, all I can say is that Commodore must not have measured the **ERG-BOARD** very carefully before designing the C64, hence the problem you have experienced.

Joking aside, we save the factory seconds for **BOILERMAKERS** fans (you seem like a nice guy, tho, & so can return yours for a new board - satisfaction guaranteed!)

We are sorry if we alarmed our readers by not getting Issue #4 out for so long. The explanation in a nutshell is this: we took a 2-week vacation to Iowa City, remembered how much we liked living here, decided to move back, had to sell our home in WA, bought a home here, my brother joined the magazine & had to learn my cryptic methods amidst a chaotic absence of organization, and to top it all off, my loving wife decided to give birth to our third child right before we could even get settled in. So, even with a full staff of 2, we got behind and hence the October publication of the "SUMMER" issue.

By the way, we have taken an amazing amount of ribbing (as well as expressions of sympathy) in response to our move to Iowa City. Besides being my birthplace, and the home of the best college football and wrestling teams in the country, Iowa City continues to be the best-kept secret in where-it's at to be from (didn't know that did you?). So there!

Scott:

You asked for it, you got it! See our exclusive first hands-on look at the Indus drive elsewhere this issue.

-BD

WRITE US!!
WE READ ALL
MAIL!
WHAT'S YOUR
FAVORITE (OR
LEAST FAVORITE)
PRODUCT?
DO YOU HAVE
SUGGESTIONS
FOR INFO-64?
WE'D LIKE TO
HEAR FROM YOU!

more...

READER MAIL



DEAR MR. DUNNINGTON:

I REALLY ENJOYED ISSUE #4. THERE WERE A FEW THINGS I WOULD LIKE TO COMMENT ON.

FIRST OF ALL, I NOTICED A MORE LIBERAL ATTITUDE IN YOUR REVIEWS. YOU SEEM TO GIVE EVERYTHING HIGHER RATINGS THAN USUAL. FRANKLY I AGREED MORE WITH YOUR ORIGINAL RATINGS.

BY THE WAY. DID YOU JUST MOVE OR WERE YOU BOUGHT OUT?

I DEFINITELY AGREE WITH YOU ABOUT THE HIGH QUALITY OF **PAPERCLIP** AND **SUPERBASE 64**. I AM NOW TRYING TO FIND OUT HOW TO GET **SUPERBASE** TO RUN ON A FIVE MEG HARD DISK.

IN 'NEWS & VIEWS':

I'VE HEARD OF SO-CALLED 16-BIT 6502 COMPATIBLE CHIPS FOR YEARS, AND STILL HAVEN'T SEEN ANYTHING. WHO IS PRODUCING THIS SO-CALLED **65816**?

I'VE WRITTEN **PAUL GOHEEN** REGARDING **COMAL 2.0**.

RE: **MSD DRIVES**. AS FAR AS I HAVE SEEN, THERE ARE ONLY TWO REASONS WHY A PROGRAM WON'T RUN ON A DRIVE:

1. THE PROGRAM CONTAINS **DOS** ROUTINES THAT, WHEN LOADED INTO THE DRIVE'S BUFFER AND EXECUTED, CHANGE THE **DOS**. SPECIFIC **DOS** ROUTINES OF THE DRIVE ARE ACCESSED. ALL **DOS**'S ARE DIFFERENT. VERY FEW, AND ONLY THE VERY NEWEST AND MOSTLY GAMES, CONTAIN THESE ROUTINES WHICH IN MOST CASES ARE USED TO SPEED UP THE DRIVE AND SHORTEN PROGRAM LOADING TIME.
2. IN MOST CASES, WHEN USING A parallel DRIVE, THE INTERFACE IS RESPONSIBLE FOR PREVENTING A PROGRAM FROM RUNNING. THIS IS BECAUSE MOST **IEEE 488** INTERFACES CONTAIN SOME PROGRAMS IN ROM THAT SIMPLY CONFLICT OR USE SOME OF THE MEMORY THAT THE PROGRAM REQUIRES WHICH CAUSES THE PROGRAM, OR IN REALITY THE COMPUTER OPERATING SYSTEM, TO CRASH. THE **BATTERIES INCLUDED 'BUSCARD II'**, I'VE FOUND, ALLOWS THE MOST PROGRAMS TO RUN. ONLY 1% OF MY PROGRAMS OUT OF 500 DON'T WORK. I'VE WIRED A SWITCH ON THE WIRE THAT PLUGS INTO THE **BUSCARD** AND FOUND THAT BY SWITCHING IT OFF, I'VE BEEN ABLE TO RUN A FEW MORE PROGRAMS THAT DIDN'T BEFORE.

I TIMED THE LOADING OF A PROGRAM USING BOTH A **BUSCARD II** AND A **RICHVALE TELECOMMUNICATIONS 'C-LINK'** ON THE **MSD** DUAL DRIVE AND A **COMMODORE 4040** DUAL DISK DRIVE. ALSO BOTH SERIAL AND parallel PORTS ON THE **MSD** WERE USED. THE **4040** LOADED, UNDER REPEATED LOADS AND WITH BOTH INTERFACES, THE PROGRAM IN 25 SECONDS. THE **MSD**, USING BOTH INTERFACES AS WELL AS THE SERIAL PORT, LOADED THE SAME PROGRAM IN 51 SECONDS. OVER 100% SLOWER THAN THE **COMMODORE 4040**. THIS IS AN APPRECIABLE DIFFERENCE WHICH NEVER SEEMS TO GET MENTIONED AND WHICH I WOULDN'T STAND FOR.

A REALLY GREAT AND WELL-DONE WORD PROCESSOR THAT I DO NOT SEE ON YOUR LIST IS **MUSE'S SUPERTEXT**. ARE THEY NOT IN BUSINESS ANYMORE? ... **TAROCO USI'S MITEY MD MODEM** SEEMS WORTH REVIEWING.

THE **PROSTICK II** AND **III** JOYSTICKS ARE VERY GOOD AND NOT LISTED...

THANK YOU. I HOPE I'VE HELPED JUST A LITTLE.

SINCERELY,
-B. V. HALUSCHAK
DELTA, BC CANADA

Dear B. V.:

Helped a little? Jeepers! You've just about written your own column here!

* **About the ratings:** This is a real problem which we're trying to sort out in a logical and meaningful way. Many ratings exist from the first issue, when **MOTOR MANIA** was one of the best (and only) games around for the 64. There never seemed to be a right time to downgrade this and other early entries that have since become old hat in the light of today's level of programming. Actually, this won't be such a problem now that **INFO-64 IS GOING BI-MONTHLY IN FEBRUARY '85**. We will only be doing the entire comprehensive product roundup once (or possibly twice) per year, at which time we will try to equalize the product ratings, putting them into relative perspective based on the state of the art at the time of publication.

* No, we weren't bought out (I want at least 3 million for the title, and I just haven't had any bites so far!). We 'just' moved (see letter above).

* See **NEWS & VIEWS** this issue for more INFO on the amazing 65816 processor! (including who makes it, where to write, and how it may profoundly reshape the course of personal computing.)

* Please let me know if you figure out how to get running on the **5-meg hard disk**! We could really use that kind of elbow room around here these days!

* Sorry you wasted a stamp writing to **Paul Goheen** at **Commodore**. They have already "thumbs-downed" **COMAL 2.0** (the fools) and it is now licensed to the eminently deserving **Len Lindsay** and his **Comal User's Group**. (again, see **NEWS & VIEWS** this issue for more INFO.)

-BD



READER MAIL



DEAR INFO-64

I ENJOY YOUR PUBLICATION, ESPECIALLY **DOUBLE TAKE**. THE DISK-DOUBLER / PAPER PUNCH COMPARISON WAS GREAT. I WOULD LIKE TO SEE A COLUMN FOR READERS TO SEND THEIR COMMENTS REGARDING THEIR OPINION OF SPECIFIC SOFTWARE THEY HAVE PURCHASED. IT SEEMS THAT FEW PROGRAMS YOU RATE GET ONLY TWO STARS, AND I CAN'T RECALL SEEING ANY WHICH RATED ONE STAR. WE'VE ALL BOUGHT AT LEAST ONE OR TWO REAL STINKERS AND I FOR ONE WOULD LIKE TO VENT MY FEELINGS ABOUT THEM PERHAPS SUCH A COLUMN WOULD SAVE YOUR READERS FROM WASTING MONEY ON LOUSY PROGRAMS. I'D LIKE TO DESCRIBE SOME I DIDN'T LIKE.

WORD-PAC BY **PACIFIC COAST SOFTWARE** HAS TO BE THE WORST WORDPROCESSOR I EVER USED. I SEE NO ADS BY **PACIFIC COAST** ANYMORE, BUT I KNOW OF AT LEAST ONE STORE WHICH STILL CARRIES IT. MY COPY WAS MISSING A PAGE OF DIRECTIONS. **PACIFIC COAST** NEVER REPLIED TO MY POLITE REQUEST FOR THE PAGE TO BE SENT. THE INSTRUCTIONS ARE ONLY ABOUT A DOZEN PAGES LONG - THIS IS AN infuriating PROGRAM, LIMITED, FLAWED, CLUMSY TO USE, ABSOLUTE JUNK. IF YOU LISTED IT, IT WOULD GET NEGATIVE THREE STARS.

IN LIGHT OF NEWER SPREADSHEETS AVAILABLE (ESPECIALLY **MICROSOFT'S MULTIPLAN**), **BUSICALC** BY **SKYLES ELECTRIC WORKS** IS OBSOLETE. IT IS WRITTEN IN **BASIC** AND THE HASHTOTAL PROTECTION SCHEME EMPLOYED MAKES IT IMPOSSIBLE TO COMPILE THE PROGRAM, WHICH WOULD HELP ENORMOUSLY.

I HAVE TO DISAGREE WITH YOUR 4-STAR RATING FOR **UMI'S MOTOR MANIA**. IT GETS BORING, CRASHING YOUR CAR INTO THE PIT WALL EVERYTIME YOU HAVE TO PULL IN FOR SERVICE. IF YOU WANT TO DRIVE YOUR C64, I'D SUGGEST LOOKING INTO **ATARI POLE POSITION**.

***BONGO CONGO** ON ROM BY **SEGA**: SCREENS MISSING, FRUSTRATING.

***COLOR 80** BY **RICHVALE**: EYESTRAIN CITY, HARD TO READ.

***VIDEO PAK 80** BY **DATA 20**: NOT USABLE WITH MANY ML PROGRAMS, BUT THE WORDPROCESSOR IS EASY TO LEARN AND WORKS NICELY. THE 80 COLUMN SCREEN IS EXCELLENT ON A MONOCHROME MONITOR.

***SIMON'S BASIC** BY **COMMODORE**: A LOT OF FUN AND A BARGAIN, BUT WHY OH WHY DOESN'T IT HAVE **PRINT USING** INSTEAD OF **USE**? THE **USE** STATEMENT DOESN'T PROVIDE FOR ROUNDING OF DECIMALS OR THE ADDITION OF TRAILING ZEROES ON DOLLAR AMOUNTS.

SEE WHAT I MEAN? I'D LIKE TO KNOW THE SHORTCOMINGS OF A PROGRAM BEFORE I PAY TO TAKE THEM HOME WITH ME. A MONTHLY COLUMN FULL OF COMMENTS LIKE THOSE ABOVE MIGHT PROVE INTERESTING. KEEP UP THE GOOD WORK.

-RUSSELL A. SPREEMAN
VILLA PARK, IL

Dear Russell:

About the ratings: This is a real problem which we're trying to sort out in a logical and meaningful way. Many ratings exist from the first issue, when **MOTOR MANIA** was one of the best (and only) games around for the 64. There never seemed to be a right time to downgrade this and other early entries that have since become old hat in the light of today's level of programming. Actually, this won't be such a problem now that **INFO-64 IS GOING BI-MONTHLY IN FEBRUARY '85**. We will only be doing the entire comprehensive product roundup once (or possibly twice) per year, at which time we will try to equalize the product ratings, putting them into relative perspective based on the state of the art at the time of publication.

-BD

> INFO-64:

I DON'T LIKE THE ERRATIC NATURE OF YOUR PUBLISHING. THE CREDIBILITY OF ANY MAGAZINE IS ITS COMING OUT ON TIME WITH THE ISSUES PROMISED. WHATEVER HAPPENED TO SUMMER '84, HUH? GET PROFESSIONAL.

-JOHN BERTIE
SEATTLE, WA

Dear John:

You're absolutely right! We have since taken drastic measures to see that our magazine becomes and stays **more regular**. First, we have instituted a policy of public floggings for staff members who don't meet my deadlines. In addition, all **INFO-64** staff are now required to eat a half-pound of prunes with lunch every day. If this does not result in improved regularity, we will be contacting you for further suggestions.

-BD

P.S. The 'summer' issue was renamed '#4' sometime around October 1st (for highly technical reasons), & it is the very issue from which you extracted the subscription envelope (& from which your comments were duly noted). By the way, thanks for your 4-issue subscription order!

OPEN LETTER ^{to} "Computists"

The following letter was forwarded to Info-64 by Progressive Peripherals & Software. It is reproduced here in its entirety.
-editor

TO THOSE OF YOU WHO PIRATE COMPUTER SOFTWARE, AND THOSE OF YOU WHO HAVE CONSIDERED IT BECAUSE OF FINANCIAL OR PEER PRESSURE, PLEASE HEAR ME OUT. I AM A PROGRAMMER. YOU HAVE PROBABLY HEARD THE LAMENTS OF THE SOFTWARE COMPANIES WHO HAVE SUFFERED LOSSES OF PROFIT. SOFTWARE RETAILERS ARE HURTING FROM REDUCED SALES EVEN IF THEY ARE RELUCTANT TO ADMIT IT. SURELY YOU HAVE READ THE THOUGHTS OF MAGAZINE EDITORS WHO ARE TRYING TO SUPPORT THEIR ADVERTISERS WITHOUT ALIENATING THEIR READERS. WHILE THERE ARE A FEW SUCCESS STORIES STILL FLOATING AROUND, AND A FEW COMPANIES ARE REAPING HUGE PROFITS FROM THE SOFTWARE INDUSTRY, MOST ARE NOT. IF YOU ARE UP ON CURRENT EVENTS, YOU HAVE NOTICED THE LARGE NUMBER OF HIGH-TECH HARDWARE AND SOFTWARE COMPANIES WHICH HAVE SUFFERED LAYOFFS OR COMPLETELY FOLDED IN RECENT MONTHS. IN MY OPINION, THIS PHENOMENON STEMS FROM A SERIES OF EVENTS BEGINNING WITH SOFTWARE PIRACY.

WHY SHOULD ANYONE PAY THIRTY OR FORTY DOLLARS FOR A PIECE OF ENTERTAINMENT SOFTWARE WHEN THEY CAN GET A COPY FOR THE PRICE OF A DISKETTE? THAT, I AGREE, IS A GOOD QUESTION. SOFTWARE COMPANIES ARE AT LEAST AS GUILTY AS THE PIRATES THEMSELVES WHEN THEY EXPECT THE CONSUMER TO PLUNK DOWN A HEFTY CHUNK OF DOUGH FOR A GAME THAT IS OF MARGINAL QUALITY. JUST A FEW YEARS AGO, WHEN THIS INDUSTRY WAS YOUNG, PROGRAMMERS WERE PUTTING OUT BETTER AND BETTER PRODUCTS. CUSTOMERS WERE EXCITED BY THE CONSTANT IMPROVEMENTS AND BOUGHT LARGE QUANTITIES OF SOFTWARE. HOWEVER, THERE WAS A PRICE TO PAY. BETTER QUALITY PRODUCTS MEANT MORE DEVELOPMENT TIME AND IN THIS RAPIDLY CHANGING INDUSTRY, TIME WAS OF THE ESSENCE. MARKETING EXECUTIVES WERE FACED WITH THE POSSIBILITY THAT BY THE TIME THEIR NEW PRODUCT WAS READY FOR MARKET, THE FAD WOULD HAVE PASSED. WHAT WAS CONCEIVED AS A VIABLE PRODUCT MAY HAVE BECOME PASSE' AT ITS CULMINATION. THE ANSWER: MINIMIZE R&D TIME TO MAXIMIZE PROFIT!

ABOUT THE SAME TIME, THE SOFTWARE PURCHASER WAS REALIZING THE EASE AT WHICH SOFTWARE COULD BE DUPLICATED. THE SEEMINGLY INNOCENT TRADING OF GAMES BETWEEN FELLOW COMPUTER USERS GRADUALLY BALLOONED INTO LARGE SCALE PIRACY. ATTEMPTS BY SOFTWARE MANUFACTURERS TO PROTECT THEIR SOFTWARE ONLY TAUNTED HACKERS AND SO BEGAN THE EROSION OF RESPECT BETWEEN SOFTWARE PRODUCERS AND SOFTWARE CONSUMERS.

IT BECAME OBVIOUS THAT THIS SITUATION COULD NOT ENDURE. AFTER ALL, IF WE SHOVE ALL THE MAKETING ASPECTS OF THE SOFTWARE INDUSTRY ASIDE FOR A MOMENT, IT BECOMES CLEAR THAT THE PROGRAMMER WRITES FOR THE END USER. IF THE COMPUTER OWNER WANTS HIGH QUALITY GAMES, THEN THE COMPUTER OWNER MUST BECOME AN OWNER OF THAT GAME. IF THAT GAME WAS PIRATED AND NOT PURCHASED, THEN THE PROGRAMMER RECEIVES NO INCENTIVE TO CONTINUE PRODUCING HIGH QUALITY SOFTWARE. I AM NOT SPEAKING SIMPLY OF MONETARY INCENTIVES IN THE FORM OF SALARY OR ROYALTIES, BUT ALSO OF RESPECT FOR A PERSON'S HARD WORK.

I WISH TO DISPEL A COMMON MYTH THAT PROGRAMMERS CRANK THESE GAMES OUT IN NO TIME AND MAKE BIG BUCKS. IT TOOK ME THREE MONTHS OF VIRTUALLY UNINTERRUPTED TWELVE HOUR DAYS TO CREATE PERPLEXIAN CHALLENGER, SOMETHING IN THE AREA OF 900 HOURS. IT TOOK MY ASSOCIATE, SEAN MOORE, AND MYSELF EACH OVER 800 HOURS TO PRODUCE WIZARD. COLLECTIVELY, THESE 2500 HOURS ARE THE EQUIVALENT OF 62.5 WEEKS OF WORK. THAT IS MORE THAN A YEAR OF EFFORT. BASED ON MY PROFITS FROM THESE GAMES TO DATE, THIS COMES OUT AT LESS THAN MINIMUM WAGE. SURELY, YOU CAN'T THINK I AM IN THIS JUST FOR THE MONEY.

IT WAS TO MY GREATEST HUMILIATION AND CHAGRIN THAT PIRATES WERE COPYING MY PROGRAMS, PASSING THEM OUT LIKE CAMPAIGN PROPAGANDA TO BOLSTER THEIR OWN EGOS; AND FURTHERMORE, SENDING ME BROKEN COPIES WITH THEIR SIGNATURE ATTACHED. I WAS EVEN INFORMED THAT AT ONE TIME YOU COULD ACQUIRE COPIES OF THESE GAMES AND OTHERS SIMPLY BY DOWNLOADING THEM FROM A LARGE NATIONWIDE TELEPHONE-MODEM NETWORK.

THIS, MY FRIENDS, IS THE HEART OF THE PROBLEM. WHEN PROGRAMMERS NO LONGER HAVE THE DESIRE TO PRODUCE QUALITY SOFTWARE, AND CUSTOMERS REFUSE TO SUPPORT THE REMAINING EXAMPLES OF GOOD EFFORT, THEN AUTOMATON PROGRAMMERS WILL PRODUCE AUTOMATON SOFTWARE FOR AUTOMATON CONSUMERS. SALES WILL BE DICTATED TO AN EVEN GREATER DEGREE BY FLASHY ADS AND FLASHY PACKAGING, AND THE SOUL OF A PROGRAM, THE ART OF IT, WILL DIE.

IT MAY ALREADY BE TOO LATE FOR HOME ENTERTAINMENT SOFTWARE. YET THE SHAKE UP IN THE COMPUTER INDUSTRY MIGHT MEAN A WAKE UP IN THE MINDS OF SOFTWARE PRODUCERS AND PURCHASERS ALIKE. WHETHER COMPUTING IS A HOBBY, OR A FUTURE VOCATION, WE MUST ALL DO WHAT WE CAN TO SUPPORT IT.

-STEVEN M. LUEDDERS
PROGRESSIVE PERIPHERALS & SOFTWARE



NEWS & VIEWS

CHANGING TIMES for INFO-64

Well, folks, after waiting 5 months for issue #4, many of you will be equally mystified (tho hopefully more pleasantly so) at receiving this issue 6 to 8 weeks later. Yes, I know our schedule has been nothing to set watches by, but we hope you will like the new game plan we have come up with. Beginning in February, '85, (with Issue #6) we will be going bi-monthly, that is, 6 issues per year. We have read your comments, heard your suggestions, and read between your lines to figure out what you would like and how you might like it done.

We have changed our treatment of the product roundup. We will only be doing the "every product under the sun" version once, possibly twice, per year. In the interim, our bi-monthlies will carry a roundup (in basically the same format) of recently introduced or changed products (also those that may be old to some, but new to us). This will make it easier for regular readers to get to the current material, while still providing the comprehensive guide, on an annual basis, that was the original inspiration for this publication. The 'mini' roundup will also let us devote more time and space to reviews, news, photos, and other items you have asked for more of, and make it possible to do it all more frequently and regularly. Starting in Issue #6, we will be greatly expanding the number of one- and two- column type illustrated reviews. We feel this length and treatment is the most informative, and enjoyable format for about 90% of the products you want to know about. Longer reviews will be reserved for especially complex or significant products which require the extra coverage. We will also be experimenting with more side-by-side comparisons, and perhaps some multiple-reviewer evaluations ala Siskel & Ebert. Another trend we will be trying to cultivate to a greater degree is reader participation, with the possibility of even doing some opposing-viewpoint capsule reviews from 2 or more readers on the same product. If we have read you wrong, we trust you will collectively let us know the error of our ways.

Don't be bashful: write us, tell us what you're thinking, how you feel about anything you see or want to see in INFO-64. We're listening.

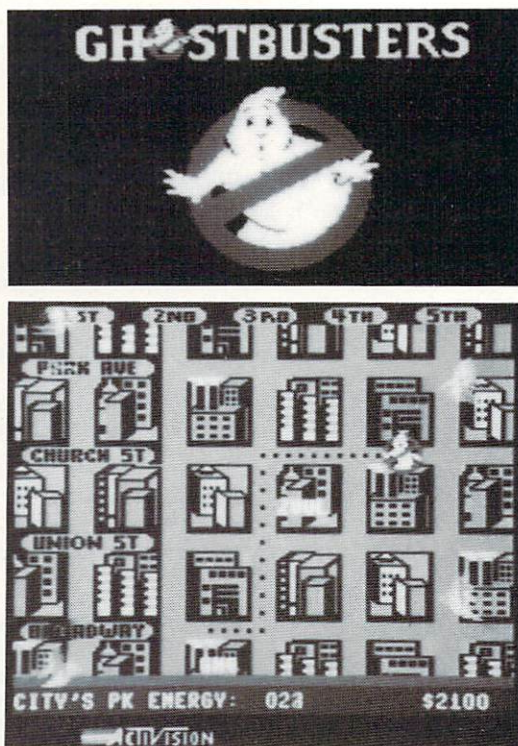
(Address all non-subscription correspondence to: INFO-64 / Route 2, Box 198-E / Iowa City, IA 52240 PLEASE, DON'T CALL US ON THE PHONE (unless, of course, you have a really hot tip that we might not have heard because you are somehow privy to information not readily available to the general public. In that case (it better be good!), we might even reward you with a complimentary ERG-BOARD).)

INFO-64 & the BIG SHAKE-OUT

You may have noticed the startling number of publications that have bitten the dust recently: Stewart Brand's **WHOLE EARTH SOFTWARE REVIEW**, **COMPUTE!'S PC JR.**, **SOFTALK**, **COLOR COMPUTER**, just to name a few. You may have been wondering, "will **INFO-64** be next?" We just want to reassure you that **INFO-64** has never been healthier. What's happening now in the publishing industry is a natural weeding-out process following the "over-farming" of what appeared to be inexhaustably fertile land for the publishing industry. Most computer magazines are launched by professional publishing companies with huge staffs, huge operating costs, and profit formulas that require as much as 70% advertising to stay in business. A few offended advertisers or a general ad slump can spell doom for many magazines. Objectivity can hardly be expected where advertisers must be carefully courted for survival. Content also suffers, not just from taking a back seat to advertising, but from the intrinsic "fill-in-the-blanks" nature of formula publishing. The subject matter is not near to the hearts of these magazines, just a topic that promises to sell well. At **INFO-64**, we started as C64 enthusiasts (who had no clue about how to publish a magazine.) We have been learning the necessary fundamentals of publishing as a means to an end. The "end", as we see it, is to have fun & make a living at what we like best and are good at: covering the world of C64 products, and participating in one of this generation's most exciting and important revolutions. When necessary, we stop testing & writing to eat, sleep, pay bills, and generally take care of the business. Our spartan offices & trim staff result in a low enough overhead that we never have to rely on advertisers for survival. Don't get me wrong, we like **QUALITY** advertisers! They help offset our costs, and add much color and needed information to our magazine, but because we can (if necessary) live without them, we can provide the honesty and candor that loyal readers deserve. We share this with you so you will know where we are coming from, and why we feel optimistic about our future and the continuance and growth of **INFO-64**. We also want to thank you all for the fantastic support, encouragement, and patience you have shown us thru our first year. We will continue to give you the best publication we can, and hope it is as good for you as it is for us!

-Benn Dunnington

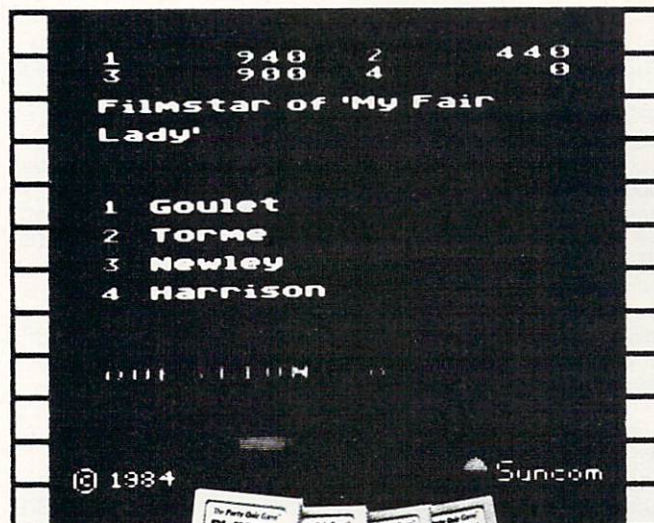
NEWS & VIEWS



If you liked the movie, your gonna LOVE GHOSTBUSTERS, another new game from ACTIVISION! When I first heard of it, I'm sure I groaned out-loud anticipating a cutesy, sub-standard, slapped-together game which would rely on the movie's popularity to sell 'em fast while the fad lasted. Instead, I was treated to some of the slickest game programming I've seen come down the pike. This game has everything! It starts with a startling software-synthesized ghost's voice taunting, "GHOSTBUSTERS! HA,HA,HA,HA...." which is immediately followed by an expertly crafted 3-part rendition of the theme song complete with scrolling lyrics under an old-fashioned bouncing ball! I almost fell off my chair! I'd buy this game for the intro alone. The game itself is pretty interesting, with players buying equipment for their ghost-busting franchise, then racing around the city trying to make money, bust ghosts, and prevent the consequences of letting the Gatekeeper and Keymaster join forces (shudder). The game has occasional synthetic verbal surprises that will crack you up, foot-tapping music (that's good enough to leave on!), lots of good animation and graphics, top-notch sound-effects, and one effect that I didn't think was possible: a continuous smooth-scrolling graphics logo and copyright notice going by under the main screen **IN THE BORDER!** How do they do that?

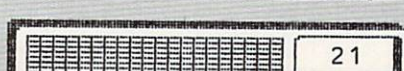
(For more INFO, contact: ACTIVISION / Drawer 7286 / Mountain View, CA / 94039 / (415) 960-0410)

QUIZ GAME with a difference..



SUNCOM has come out with a trivia-type quiz game that is truly deluxe! PQ the PARTY QUIZ GAME, distinguishes itself among other computer-moderated quiz games by virtue of its well-made and responsive 4-player game controllers. Each player (up to 4) gets a 4-button hand-held controller that plugs into a box that in turn connects to both joystick ports. After selecting from a menu of varied game options, the players are presented with both multiple-choice and true/false questions (some hard, some easy, some funny). Players push one of the four numbered buttons to indicate their choice. The first player with the right choice gets points based on the time elapsed. Players making incorrect choices are locked-out from making second choices. Play continues thru the selected number of rounds and then finishes with a bonus session where each player gets a chance to improve their score by answering as many questions correctly as they can in a fixed time period. While the type and difficulty of questions cannot be controlled, there are timing and handicapping features for controlling how hard the game will be in general, and for each person in particular.

(for more INFO, contact: SUNCOM / 260 Holbrook Drive / Wheeling, IL 60090 / 800-323-8341)



NEWS & VIEWS

More on the 65816 superchip

We got lots of letters on the 65816 16-bit "Super-chip" (News & Views, Issue #4). We had passed-on what little (and admittedly incomplete) INFO we had gathered at the time, because this story seemed like it would soon develop to significant proportions. Since then I have had the opportunity to speak with Bill Mensch Jr., president of Western Design Center, and designer of the 65816. Folks, make no mistake, **THIS IS A BIG ONE.**

The 65816 (actually the **W65SC816** for 'long') is a new generation CMOS microprocessor which is upwardly compatible with the 6502/6510 family of microprocessors (C64 / Apple / Atari etc.). Some of the 816's more notable features include:

- * Hardware and software compatibility with 6502 & 6510 computers (C64, Apple, Atari)
- * **16 Megabyte** (16,000 K) addressing capability (compare this to the paltry 700k maximum of the IBM PC. Even the new IBM PC AT stops at 3 Megabytes!)
- * 4 Mhz. clock speed (due to the way the 65816 operates, its functional speed is much greater than even this would suggest, performing some operations 14 times faster than the 'fast' 8086 chip found in high-performance PC compatibles, and up to 5 times faster than the 68000 chip in the MACINTOSH & LISA).

* Low power consumption.

* Can access C64 Basic Input Output System (BIOS) via cartridge port (much like the Z80-A in the CP/M cartridges for the C64)

* Obsolescence-resistant design: just in case you're worried that 16 MEG might eventually cramp your style, the 65816 can **itself** be replaced by other Western Design chips now-under-development, like the **Mensch Computer Chip**, a single chip that includes a **20Mhz 65816** plus disk controllers, ACIA, VIA, & CRT controller, or how about the **65864** which is a **64-bit minicomputer-on-a-chip** that can pop right in where your 65816 was (when you get ready to use your C64 for 5th generation artificial intelligence, or to simulate the energy consumption in every building in New York, etc.)

What will it take for these possibilities to become products you can buy? Contrary to some published reports you may have seen in INFO-WORLD recently, Mr. Mensch assures me that a broad range of SUPER-CHARGER products based on the 65816 are not only possible for the C64, but fairly trivial projects for engineers and third-party hardware companies who don't have an aversion to becoming wealthy.

We are energetically trying to find such a party to introduce to the creative folks at Western Design Center so this can come to pass.

What will it mean for personal computing when these add-on products become a reality? It means that the 5 million persons expected to own C64's by this Christmas (plus all the owners of Apples) will never need to buy another computer to do anything that can be done in the realm of micro to mini computing. Software and peripheral products will only become obsolete by virtue of their relative performance to newer products, rather than by the current havoc-wreaking practice of introducing successive waves of incompatible hardware. What is Bill Mensch's stake in this revolution? Not only does his company stand to sell a ship-load of chips, but Bill's self-avowed mission in life these days is to "kill off the mainframe industry". Personally, I think he stands a good chance of doing it!

Stay tuned to this magazine for continuing coverage of this and other WDC product developments, as well as an in-depth interview with the brains behind them all... coming soon to a newsstand near you. (for more INFO, contact: Western Design Center / 2166 E. Brown Rd. / Mesa, Az / 85203 / (602) 962-4545)

mind-probing software

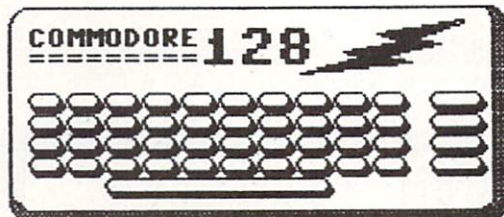
HUMAN EDGE SOFTWARE is a new addition to our **PERSONAL ENRICHMENT** category of products. Their recently announced product is **MIND PROBER**, which promises to allow the user to learn an amazing amount of information about somebody by responding to a list of 66 personality traits of that person as perceived by the user. **MIND PROBER** is not meant to uncover serious psychological problems, but rather to "tell you how people are". Developed by a husband and wife team of psychologists, the program is claimed to be an "expert system" (ie: making use of sophisticated artificial intelligence techniques). At \$29.00, that would be a definite first!

(for more INFO, contact: **HUMAN EDGE SOFTWARE** / 2445 Faber Pl. / Palo Alto, CA 94303 / (415) 493-1593)

NEWS & VIEWS

"SUPER-64" is actually 128!

A source close to Commodore confirms that the long-rumored "SUPER-64" is now scheduled for release in March (price open to speculation). Currently designated the "128", the new machine is said to be 64 compatible, with 128 K of internal RAM, expandable to ???, and has both 40 & 80 column display capability built-in. If the 128 is indeed 64 compatible, this will be a welcome addition, and may extend Commodore's domain to the borders of IBM- and APPLE- LANDS. You can bet that INFO-64 will be covering this machine closely when the time comes. We will also bet that the PLUS/4 will be off the shelves by then, being further invalidated by the 128.



** R. I. P. **

HI-TECH BOOT HILL has been very busy in 1984. Among the casualties:

HUMAN ENGINEERED SOFTWARE (HESWARE assorted software)

CHALK BOARD INC. (POWERPAD graphics input device)

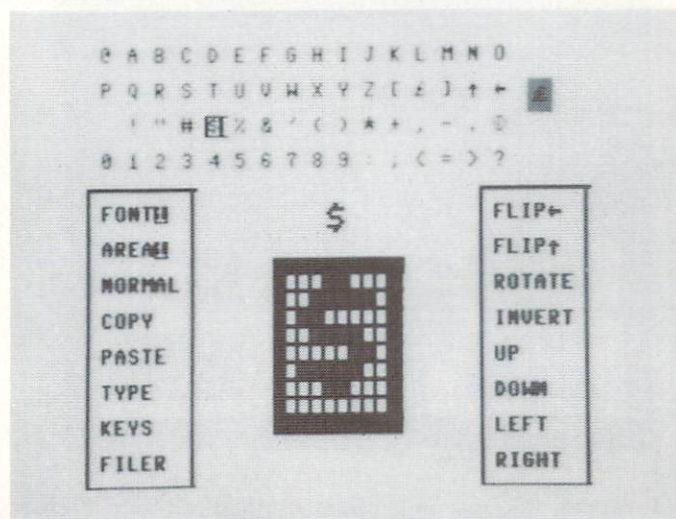
OSCAR BAR-CODE READER by DATABAR CORP.

Non-standard bar code and high-cost software made this product a long shot from the beginning.

CYBERIA: one of the oldest names in Commodore software, and the only manufacturers of farm-management software to our knowledge.

QUICK BROWN FOX: a popular word-processor from the early days.

INKWELL adds font package



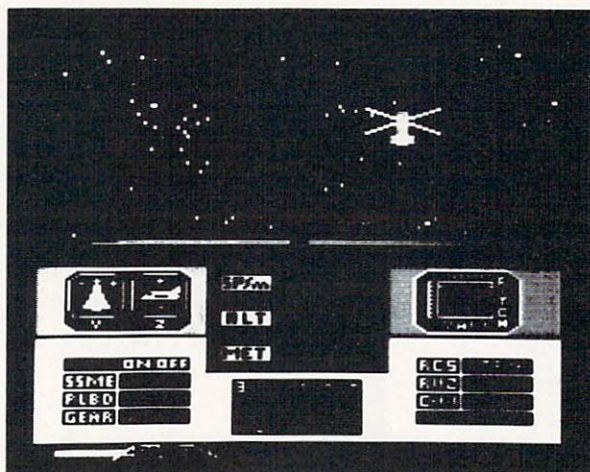
STANDARD standard Roman Set Type Set
DO YOUR OWN COMPUTER ENGLISH
SMALL COMPUTER Gothic Set
FANTASY SET ART DECO SET

INKWELL SYSTEMS, the makers of the FLEXIDRAW lightpen / software system, have been at it again, upgrading their already-excellent drawing package, and recently adding an enhancement product called FLEXIFONT. FLEXIFONT is a separate program which allows the user to create custom fonts which may then be used by FLEXIDRAW. Fonts may be created in either 8 X 8 dot character blocks, or in a special 16 X 16 "FLEXI" format, the latter making possible much more professional-looking characters (the labels for NEWS & VIEWS were generated with one of the "FLEXI" fonts which come on the disk.) A full set of tools makes creation and alteration of fonts a snap, and a very cunning program is also included which allows you to "capture" fonts from other programs (a practice which INKWELL assures me is 100% legal, as font-styles are apparently non-copyrightable.)

(for more INFO, contact: INKWELL SYSTEMS / PO Box 85152 MB290 / 7677 Ronson Rd. / San Diego, CA 92138 / (619) 268-8792)

NEWS & VIEWS

True Tales of the C64!



Of course INFO-64 is a classic example from "True Tales of the 64". We really do rely on our 64's (in real life!) for every aspect of creating, distributing, and managing INFO-64 Magazine. We are not, however, the only 'serious' outfit benefitting from the incredible C64: a much more fascinating, but no less true, story comes to us about the ACTIVISION game, **SPACE SHUTTLE**. It seems that sometime during the game's two years of technically virtuous development, a game tester accidentally but successfully landed the game's shuttle using its small maneuvering engines instead of the large engines meant for the job. NASA was as surprised as anyone when subsequent simulations on their mega-computers verified the validity of the game's outcome. NASA has since added a small-engine landing procedure to the actual shuttle operations manual as an emergency landing technique.

(For more INFO, contact: ACTIVISION / Drawer 7286 / Mountain View, CA / 94039 / (415) 960-0410)

(If you know of any good "True Tales of the C64" please share them with us for publication in future issues. Send to INFO Publications / 'Tales' / Rt. 2, Box 198-E / Iowa City, IA 52240)

COMAL 2.0 64K cartridge

FIRST THE BAD NEWS: Last issue we asked readers to write Commodore's Paul Goheen petitioning for the release of the **COMAL 2.0** cartridge. We're sorry if anyone got writers cramp; since that time, Commodore (apparently not wanting to break a 10-month streak of bad calls, fumbled balls, and self-inflicted injuries) has decided to 'pass' on its option to market what promises to be one of the most significant and popular software products to come along since **BASIC**.

NOW THE GOOD NEWS: It's probably just as well. Who knows how long it would have taken to reach the shelves, in what condition, and at what price. As it stands **PROFESSIONAL COMAL 2.0** in its final 64K cartridge form is now available from The **COMAL User's Group** at \$99.95 for the cartridge (or \$128.95 for the cartridge plus two books and two additional support disks). (Personally, I hope they make a bundle, and put a COMAL cartridge into

CBM tidbits

We hear that the **SX-64**, Commodore's only entry into the portable market, has been discontinued. Ironically, the poor sales of the **SX-64** seem to have resulted from a Commodore-generated "catch-22": consumers didn't buy the single-drive **SX-64** because they were waiting for the "soon to be available" dual-drive version... at the same time, Commodore didn't release the dual-drive version because single-drive models were moving so slow!

PASS correction

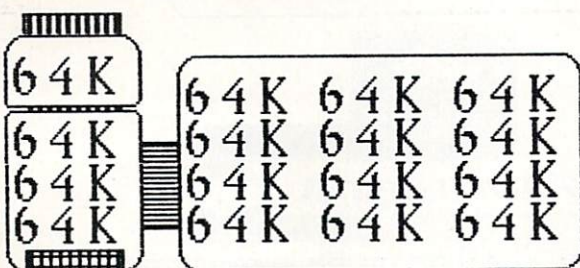
In our coverage of music products, last issue, we told you about an excellent program called **PASS**, from **PARABOLA**. Only problem is, we forgot to tell you where or how to get it. **PASS** is now called **ALLEGRO**, the price has been dropped to \$39.95. It has been improved (easier "wah-wah" and vibrato routines, more familiar keyboard input scheme), and licensed to **ARTWORX** for national distribution later this year.

In the meantime, you can obtain it directly from the author, Bob Landwehr, at **PARABOLA** / P.O. Box 95844 / Seattle, WA 98145 / (206) 524-1464.

NEWS & VIEWS

APPLE EMULATOR
rides again !!

MOSAIC ready
with ACCESS-M



We first announced this product in December, 1983 (Issue #2) scooping the "Big" magazines and ending up a little embarrassed when the product got put on a long hold and looked for a while like it could be shelved. Now we are glad to see that Wynn Smith and his crew are apparently to the stage where they can take your money and give you an additional 64K RAM (for \$199.00) or a full Megabyte (for more \$\$. This is a unique memory expansion product that can be used as both additional RAM and as an electronic disk drive (RAMDISK). The software for these applications is included, and requires no technical knowledge to use. The memory management technique is a proprietary system called RAMSCAN so-named because of the way the additional RAM is "scanned" by two independent 4K "windows". Physically, the basic ACCESS-M product is a cartridge-like plug-in unit with a thru-port for additional cartridges and an expansion port for external ram expansion beyond 256K. An optional power pak is available for maintaining the contents of the Mosaic Ram even when the computer is turned off. This power pak is required for configurations of 192K or more. What does this product actually mean for the end user? Two major types of benefit immediately spring to mind:

1) You should now be able to load up a file-intensive program like SUPERBASE-64, and access and manipulate all your files at lightning speed (with a 70k/sec data transfer rate, complex searches or major database alterations that took 15 minutes to a half hour, can be expected to take more like 5 to 10 seconds to complete), "shell"-type software should also be possible now that will allow the simultaneous accessing and integration of several of your favorite applications titles.

2) New, high-powered memory-hungry software (like a 64 Lotus-type product) will now be possible, and indeed, several major software companies are said to be at work on products which will take advantage of the expanded capabilities.

(For more INFO, contact: Mosaic Electronics, Inc. / PO Box 708 / Oregon City, OR 97045 / 1-800-ADD-RAM)



When it rains, it pours! Within weeks of Mosaic's return to the marketplace with ACCESS-M, another company has re-appeared after a similar absence following an exclusive news item in the same (ill-fated?) issue of INFO-64. You've probably seen the ads by now for MIMIC SYSTEMS (an outgrowth of PIONEER SOFTWARE) which is doing a ton of advertising (unfortunately, none with INFO-64) for their long-delayed Apple Emulator product, formerly called the "AP MODULAR PAK" (this is a 3-level add-on box that gives you 8 Apple-type peripheral slots, 4 C64 expansion slots, a power supply, translating CPU, and a card that tricks the 1541 into thinking it's an Apple drive.) The rap is the same, the price is about the same, it seems that only the name and the eventual release-date have changed. Actually, some other things may have changed as well: like the demand for an Apple emulator at all, now that so much fine stuff has been produced for the 64 (the only Apple product I know of that I covet, and can't get the equivalent of for the 64 is FONTRIX (an impressive graphics package), and it, or something darn close, will probably be out by the time). I think this product would have been important a year ago if they could have brought it to market then, now... I think it may be too late. At any rate, we are promised a demo unit for review in time for the next issue (#6 - Feb. 85). By then, we are told, you should also be able to buy the finished product.

Oh, if you're wondering what ever happened to PIONEER SOFTWARE, they're back too, under new management, marketing a line of pretty decent software.

(for more INFO, contact: MIMIC SYSTEMS INC. / 1112 Fort St. / FL 6J / Victoria, BC Canada / V8V 4V2)

NEWS & VIEWS

64 writes your business plan

This product is actually a set of **templates** for the **CALC-RESULT** spread-sheet program. For \$200.00 **ESS** (ENTREPRENEUR SOFTWARE SERIES) promises to produce the necessary: sales forecasts / job cost estimates / break-even analyses of new products / fixed and variable expense forecasts / advertising cost-benefit analyses / cash-flow projections / monthly and 12-month pro forma projections / start-up expense forecasts / multiple location break-even analyses / & amortization and effects of automation. Separate templates available for business services, consumer services, food & beverage, facility-oriented, retail stores, and home-based businesses.

(for more INFO, contact: Entrepreneur Magazine, Computer Research Division / (800)-421-2300 or (800)-421-2345)

MACHINE LANG. TRANSLATOR

SCREEN LISTING:

INPUT:COMMAND:OPERAND:ADDRESS:PROGRAM

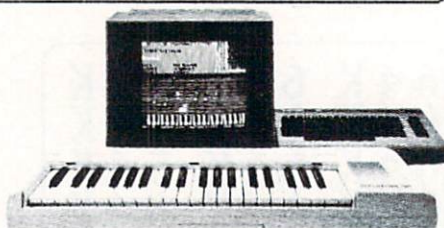
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32    JSR                                828
JUMP TO SUBROUTINE AT THIS ADDRESS
      228                                829
      255    65508    830
GETIN- GET CHARACTER FROM KEYBOARD QUE
  
```

Billed as an aid to de-mystifying machine language programming, **D-CODER** from **MEGASOFT** is said to allow access to machine language programs from either disk or memory. These programs may then be listed to screen or printer. Listings show columns for command numbers / operand numbers / assembly lang. version of command numbers / address / and memory location. Explanations of commands are also printed when requested by the user. While this program sounds like a convenient tool for pirates, its advertised (and more acceptable application) is to help neophytes examine and thus better understand how programs are written in machine language. \$19.95

(For more INFO, contact: MEGASOFT / PO Box 1080 / Battle Ground, WA 98604 / (206) 687-5205)

MELODIAN shows new keyboard



We had few kind words for the keyboard component of the otherwise well-done **concertmaster** music product from **MELODIAN**. We must not have been the only ones that sneezed at their cheap-looking keyboard, because they have since replaced it with a very nice-looking unit that seems more competitive with the rest of the industry. We are still waiting for a review copy, and hope to have a first-hand update for you eventually.

Where's that "Q-STAT" ???

Another INFO typo has frustrated some of you who have been trying to track down a product called **Q-STAT**, a \$270 statistics package. The correct vendor code should have been **QIN** instead of **QUI**. (for more INFO, contact: Quality Input / 309 W. Beaufort / Normal, IL 61761 / (309) 454-1061)

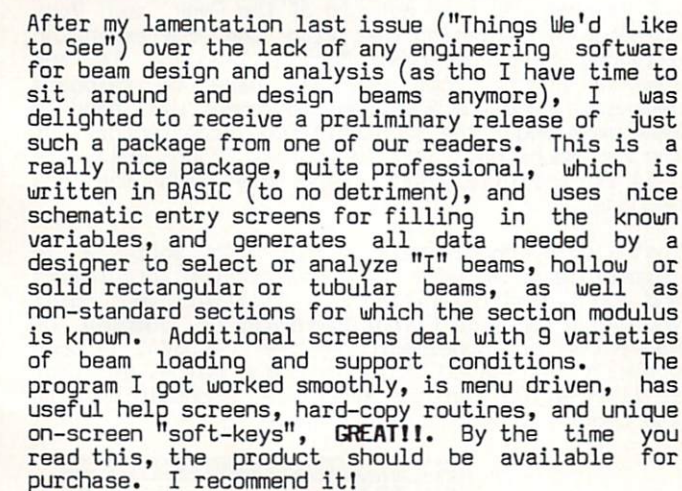
"S" GAMES

As of this writing, it appears that **Human Engineered Software (HES)** has failed in its attempts to find a buyer and is Chapter-11 bound. What happens to all the software they have been marketing (mostly licensed from outside companies and individuals)? One such company, **3-2-1 Software, Inc.** of Bellevue, WA has regained the rights to its creation, "**HESGAMES**", and is now re-marketing it under the name, "**S GAMES**". In the process they have added synthesized speech, humor (press the F5 button during the long-jump, we are told), and have dropped the price from \$34.95 to \$14.95! Now that's progress! (We can only hope that **Microsoft** will now take over selling the **HES** incarnation of their **MULTIPLAN**. How about a new price, like \$49.95 ??)

(for more INFO, contact: 3-2-1 Software, Inc. / 2845 140th ave. n.e. / Bellevue, WA / 98005)

By: John J. Hartley Jr.

By: John J. Hartley Jr.



(For more INFO, contact: John J. Hartley, Jr. P.E.
/ 8615 Locust Ct. / Louisville, KY / 40222)

By: Anthony Chandler

By: Anthony Chandler



(for more INFO, contact: PIONEER SOFTWARE INC. /
1112 Fort St. / Victoria, BC Canada / V8V 4V2 /
(604) 381-3211)

THE PLUS/4

Reviewed by: Benn Dunnington



I was there, among the severely unimpressed, when the PLUS/4 was introduced (as the 264) at CES in Las Vegas last January. Six months later, no one seemed much more excited when COMMODORE renamed it the PLUS/4 and wheeled it out again at CES in Chicago last June. With responses from dealers, journalists, and software manufacturers running anywhere from indifference to outright ridicule, I fully expected COMMODORE to take the hint and retreat to the proverbial drawing board (hopefully to come back with something really neat in time for Christmas).

In spite of persistent rumors fortelling it, I was still surprised to walk into Sears this October and see the darn thing sitting on the shelf for sale! Needless to say, I whipped out my checkbook and grabbed one (explaining to my wife, "it's my job, dear: I don't like it any better than you do, but somebody has to do it!"). In the back of my mind I was hoping that COMMODORE had somehow made some improvements in this production version that would make it worthy (and give us a second machine to cover in the magazine). I got it home & set it up. After the initial thrill of 121 colors and BASIC 3.5 had worn off, it was time to face reality & ask myself the burning question, "is there anybody home in Westchester Pennsylvania?"

I'm not going to make you wait till the end of this review for my verdict: I think the PLUS/4 is not only THE MAJOR CONSUMER ELECTRONICS DISAPPOINTMENT OF 1984, but an insult to the intelligence of consumers and a blown opportunity for COMMODORE. I think COMMODORE has made a terrible (if not fatal) blunder by introducing the \$299 PLUS/4 at any price, and I hope you don't waste your money on one (unless, of course, you have money to waste). Strong words you say? You bet! I'll go even further by saying that if COMMODORE doesn't get with the program in a hurry, with some products that actually respond to the needs and wants of the personal computing public, they will not only lose their dominant position in the home computer market, but will become the Texas Instruments of 1985- choking in the dust of ATARI, APPLE, IBM, TANDY, and new companies that will emerge to fill the void.

THE CONCEPT

The biggest problem with the PLUS/4 is the fundamental concept: an 8-bit, 64k, 40-column desktop personal computer??? COMMODORE ALREADY MAKES THE BEST 8-BIT, 64K, 40-COLUMN DESKTOP COMPUTER YOU CAN BUY, WITH LITERALLY THOUSANDS OF PRODUCTS SUPPORTING IT! Why should consumers want a "new" machine with no significant advances, several new limitations, and virtually no 3rd-party product support? And why would a company with no competition in the under \$500 category bring out an incompatible that can't compete with anybody's machine except their own? It just doesn't compute!

THE HYPE

The PLUS/4's proponents (which, in addition to COMMODORE, now seem to include Jim Butterfield, Tom Benford, Run Magazine, & Compute! to name four more than I would have thought possible) enthusiastically point to its advanced BASIC, built-in "productivity" software, "128" colors, 60k of useable BASIC RAM, and independent cursor keys as if these minor to questionable embellishments somehow justify this technological detour (and at \$100 more than a C64). The part that really hacks me off, though, is this "productivity" handle, which seems to be a new COMMODORE euphemism for "lacks compatibility, sprites, & decent sound capabilities". In what conceivable way is a computer's productivity enhanced by these limitations?? These sound like the same guys who were telling us our kids had to learn how to program (not use, but program) computers to survive in the 1990's. Give us a break!

COMPATIBILITY

Boy, have I heard some skirting with fiction on this topic! Here I have to call RUN magazine on their shameless P.R. job for the PLUS/4 in the November, 84 issue: one of the sidebars on page 36 reads (the bold-face is ours):

"Myth 3: Software for the Plus/4 and C-16 is not compatible with the C-64 and the Vic-20." They then go on to say;

"Fact: Basic on the new machines is the same, but enhanced. Basic programs from earlier computers will load and may run. The major job in converting a C-64 program is to get rid of the Peek and Poke commands by replacing them with the corresponding extended Basic commands. Machine language is the same as before, but you may have to relocate addresses, and the advanced programmer will need to know more about the sophisticated architecture of the new machines. Cartridges that plug into the C-64 are definitely not compatible with the new machines."

What kind of double-talk is this? The software is compatible if you are a sophisticated programmer and don't mind re-writing it? I'll tell you this: you can't run your Flight Simulator or Jumpman or Paperclip or Superbase on the PLUS/4. Some strictly text-based BASIC programs, maybe, but that is like saying that the APPLE is compatible with the C-64!

more...

THE PLUS/4

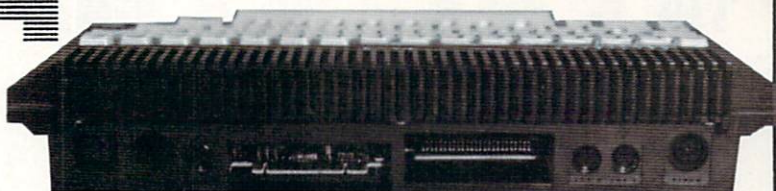
continued

Now **COMMODORE** (see **INFOWORLD**, Oct. 29, 1984) is saying that if compatibility should become an issue for consumers, "we'll know about it very quickly. If the demand is strong, we'll be able to react very quickly as well." We all know how quickly **COMMODORE** has been able to react with announced products, much less "we'll wait and see" products. And what am I hearing? People are going to buy a PLUS/4 for \$100 more than a 64 so that they can spend another \$50-\$100 for a conversion product that turns their PLUS/4 back into a 64? I can just see the happy faces of consumers lined up at **SEARS** now! These guys missed their calling, they should have been in Politics!

THE KEYBOARD

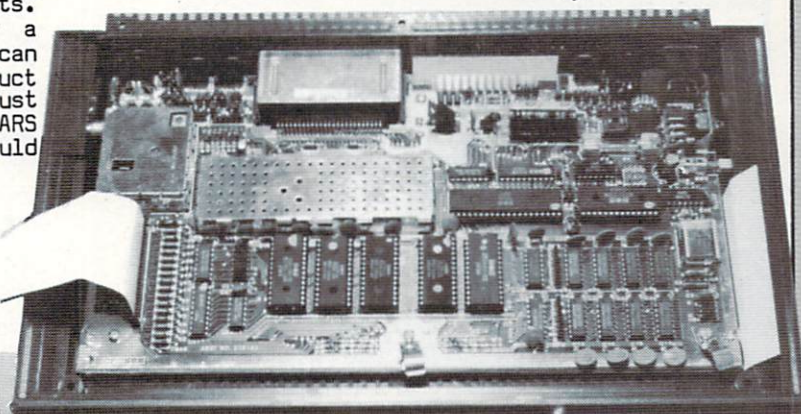


The keyboard, while attractive from a styling standpoint, is a big step back from the 64 in regard to comfort, construction, feel, and utility. The keys have a lot of side-play and make an annoying "clacking" sound when struck. Their light-weight feel is no match for the reassuring solidity of even a 'vintage' C64. When I first saw the PLUS/4, I thought the cursor pad and function key layout would be a great improvement: but, after using them in 'real life', I find that the old C64 layout is actually easier to use, and provides a better link between mind and hand. The problem with the cursor cluster is the key design: the little arrow shape, while immediately logical to the eye, feels like a diamond to the finger, and as such is not tactily informative. The function keys are narrow, and difficult to hit in stride while typing. Function and cursor keys also have a different throw, and require a different pressure than the rest of the keys, further detracting from one's typing enjoyment. One last note on the keyboard: this computer was originally shown in 2 models, one (the former 364) with a separate numeric keypad. In light of the big "productivity" emphasis, it is hard to understand why **COMMODORE** didn't at least release the "364" version, which would have appealed much more to "serious" users.



All ports are in back

Tidy interior layout...



OTHER FEATURES

One of the nicest "extras" on the PLUS/4, is the addition of 8 luminance levels to a palette of 16 colors. Simple math would suggest a resulting 128 colors (and Commodore claims as much), but because black is black at any luminance, there are actually only 121 unique hues definable (and many of these cannot be distinguished from each other.) As nice as this ATARI-like range of colors may be for games, it would seem to be an unimportant feature in a "productivity" machine which has been stripped of "unproductive" SPRITES & SID CHIP.

Another big would-be selling point is the availability of a full 60K of BASIC RAM for programming! For advertising campaigns this is super, for a "productivity" machine it is immaterial: what businessperson, writer, or accountant is going to write his or her own applications software in BASIC? Good commercial applications packages are all written in machine language anyway, and the 64 actually has more RAM available for this type of program than does the PLUS/4! (Plus, how many BASIC programmers do you know who have been hampered by the 39K of BASIC RAM in the 64?) Let's face it: at best, the PLUS/4 would be an interesting hobby machine, if it weren't for the complete lack of product support.

more...

THE PLUS/4

continued

THE SOFTWARE



	January	February
Materials	7000.00	4000.00
Labor	10000.00	7000.00
Shipping	875.00	3000.45
Utilities	500.00	2000.00
Insurance	457.00	1000.00
Postage	749.38	895.00
Office Supp	196.00	657.00
Entertainment	8000.00	5752.44
Travel	12000.00	9000.00
Miscellaneous	500000.00	8500.00

R:C12 3 1 NUMERIC 50 17 MANU.
C>500.00

Here's your spreadsheet: only 36 cells displayable. Compare to **CALC-RESULT's 147**. Like the other selections from **3 PLUS 1**, it is slow, awkward, and under-powered.

We have three items here: the new **BASIC 3.5**, the so-called "productivity software" which is built-in to every **PLUS/4**, and the additional software (if any) you will be able to buy.

The enhanced **MICROSOFT BASIC** (why '3.5'?) is the **PLUS/4's** only real strong point. It reminds me very much of **MICROSOFT BASIC** for the **RADIO SHACK COLOR COMPUTER** with a few extra goodies thrown in (and a few missing, like renumbering). As such, it is clearly not an industry breakthrough, just a **COMMODORE** breakthrough, and something that could/should have originally been a part of the **C64**. While **3.5**, with its direct graphics, sound, and advanced programming commands is sure to delight **BASIC** programmers, it is not clear how this relates to "productivity" in the usual (business) sense. Furthermore, many excellent extensions to **BASIC** (as well as other advanced languages like **COMAL 2.0**) are now available for the **C64** which provide similar or even superior programming environments.

The built-in "productivity software" is called **3 plus 1**, written by **INTERNATIONAL TRI-MICRO**. The "3" is for wordprocessing, spreadsheet, and file management and the "1" is for the business graphics (which are actually part of the spreadsheet). As entry-level "all-purpose" or orientation software, **3 plus 1** is marginally passable: as "productivity" software it is a joke. If you really need wordprocessing, or data management, or spreadsheet functions for serious "productive" work, you are in deep trouble with the **PLUS/4**!

Not only will **3 plus 1** be inadequate for your serious application: the stuff you will eventually need isn't even available yet (and the 3rd-party companies we polled had no immediate plans to even start work on **PLUS/4** products at this time). This isn't the same market that the **64** faced when it first came out, where you could just drop a new machine on the shelves and sit back and watch the software sprout up like mushrooms! Most of these companies are struggling for survival right now, several have told us that they want to see a **million units installed** before they invest the big bucks needed for product development & conversions.

THE FALLOUT

Unfortunately for uninitiated shoppers, all this hype sounds great in the showroom, and first-time buyers will have a hard time saying "no" to even a mediocre salesperson. **COMMODORE** is using their good name to peddle a turkey, and the backlash of disgruntled consumers (not to mention **Sears**, who has had trouble with **COMMODORE** in the past) will be terrible to behold. Then, when (and if) **COMMODORE** actually has something hot to sell (like the **C-128**, or the 32-bit **Amiga-Machine**, or a **64-compatible** lap computer), the public and the mass-merchandisers may very well turn away in disgust. Who could blame them?

BLOWING IT

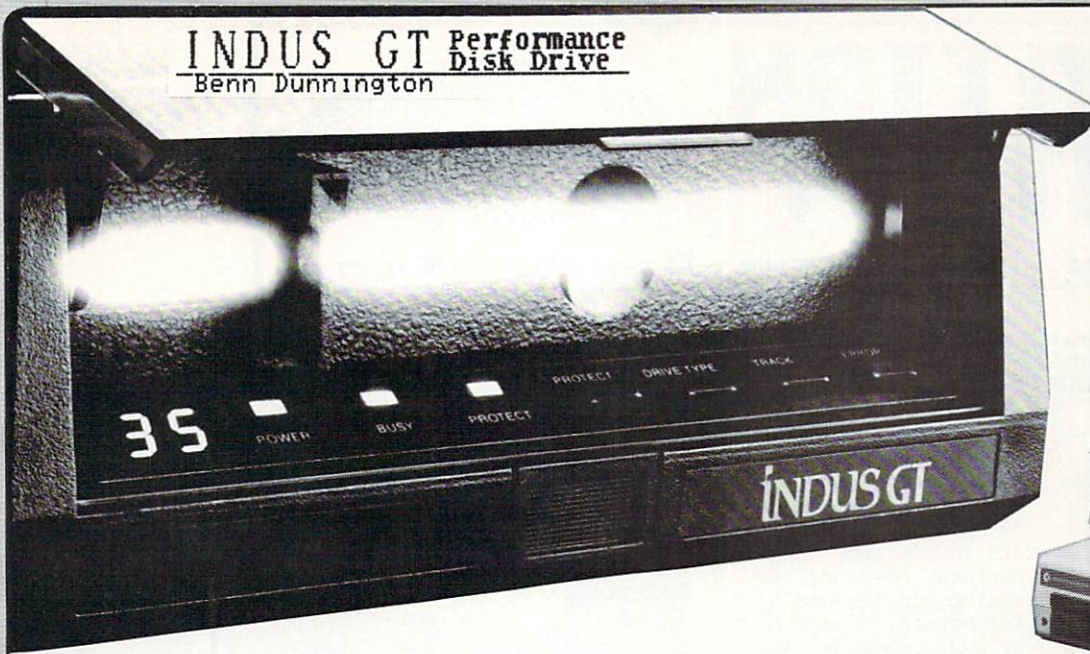
The frustrating thing here is that there are so many other products that **COMMODORE** could have brought to market at this time that would send consumers into a buying frenzy: how about a **64-compatible** lap-computer (like **Radio Shack's Model 100**) that you could carry with you to class or breakfast or the Bahamas or whatever? Do you think there would be any interest in a decent disk drive (like a **3.5" 1/2-megabyte high-speed model**)? How about a bank-switched cartridge version of **BASIC 3.5** for the **64**? Maybe some decent software for a change? What about the **12-voice synthesizer keyboard**? How 'bout a digitizer tablet or a mouse? I'd even be somewhat optimistic about a business version of the **64** with a numeric keypad.

For now, I recommend you spend your money on products to enhance your **C64**, or save it for a lap-**64** or a better disk drive when they become available. I can only recommend the **PLUS/4** to collectors (or others for whom the value of an object is inversely proportional to its usefulness, success, and quantity manufactured.)



INDUS GT Performance Disk Drive

Benn Dunnington



INDUS GT front control panel details. (The unit we tested did not, however, have "Close Encounters" light radiating from the loading slot.)

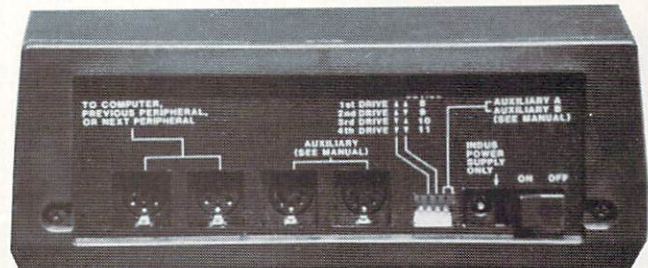
INDUS GT shown piggy-back on 1541. External power-supply makes the INDUS GT smaller, cooler, and more dust-resistant.



A better disk drive is on the wish-list of many C64 owners. Indus Systems has responded with a new single drive that is fast, quiet, reasonably compatible, well-equipped with sensational features, and.....sexy!

Tightly packaged in a sleek black housing, the INDUS GT has both a "fast loader" and "DOS wedge" built into a ROM chip in the drive. The drive actually thinks the ROM is a second drive, and you load the enhancement software from ROM with the command, "load'1:*',8,1". Current advertising suggests a 400% increase in speed. We found this to be accurate for most software that would load under the INDUS "fast loader" software. The notable exception being Electronic Arts programs (which will load & run fine, but at the same speed as a 1541). A few titles we tried (FLEXIDRAW, IMPOSSIBLE MISSION, PRACTIFILE, & SUPERBASE-64) simply would not load in the "fast" mode (& SUPERBASE wouldn't load at all). PRACTIFILE loaded in the normal mode, but would not run properly. Indus reports that they have already revised the operating system to allow SUPERBASE-64 to run properly, and are working with other software houses to ensure future compatibility. Standard DOS functions are also 4 times faster; "Newing", for instance, takes only 21 seconds on the INDUS GT vs. 84 seconds on the 1541. It appears that file maintenance and other disk-accessing operations are not speeded up. Spell-checking a PAPERCLIP document, for instance, takes just as long with either system. The INDUS GT uses the familiar dual-socket 6-pin DIN connector arrangement found on the 1541: in this way, 4 drives and a printer may be daisy-chained together.

The front of the INDUS GT has 4 switches. With these the operator may poll the error channel, request the track numbers being accessed, inquire as to the drive's current device assignment, and disable the drive's ability to write to the disk (write-protect). 2 LED's display this information, with additional lights for power, busy, and protect status (it's fun to watch the track numbers whip by during the 21 second formatting operation!"



BACK PANEL: Two 6-pin DIN sockets for serial connection. Two additional sockets for future enhancements (a parallel upgrade is being considered). Two DIP switches control drive # (8,9,10,11): the other two are for, you guessed it, future enhancements.

As advertised, the INDUS GT is reasonably quiet (about the same as a new 1541), stays fairly cool, and is very compact (the last two items resulting to a large degree from the fact that an external power-supply is used, similar to the one on your C64.) Because heat buildup is reduced, the housing is able to do without ventilation slots, resulting in an almost dust-proof working environment for your diskettes. To further combat dust, a gas-cushioned acrylic door fits down snugly over the loading slot and controls. Several goodies come with the INDUS GT. Bundled software on diskette includes entry-level wordprocessor, database manager, spreadsheet, & copy software. Also thrown in for good measure is a copy of DATAMOST's Elementary Commodore 64. The whole thing comes in a sturdy ABS carrying case that makes it easy to take your drive to user-group meetings, and doubles (if you use your imagination) as an 80-disk storage unit when the drive is unpacked. Documentation is brief but to-the-point, with separate guides for the drive & each software title.

Overall, the INDUS GT is a quality product, a definite step forward, and a good value even at the full list price of \$399.

(for more INFO, contact: INDUS SYSTEMS / 9304 Deering Ave. / Chatsworth, CA 91311 / (800) 54-INDUS)

ANIMATION STATION

reviewed by: Eann Dunnington



SUNCOM, well known for their joystick products, has now entered the home graphics tablet marketplace with their **ANIMATION STATION** graphics tablet. This product is squarely aimed at territory previously staked-out by the popular **KoalaPad**. Until now (& especially since the demise of CHALKBOARD's **POWERPAD**) this territory has remained largely uncontested.

Basically the two tablets operate in the same way: a pressure-sensitive drawing surface responds to finger or stylus position, causing corresponding cursor positioning on the monitor screen. Function buttons are used to invoke various commands and select options. Both systems connect to the **C64** via a joystick port, are sturdy & physically well-made. The active surface of the **ANIMATION STATION** is somewhat larger and more rectangular than the **KoalaPad**, and has a grid pattern printed on it.

The **ANIMATION STATION**'s design improves upon the **KoalaPad** in several ways: two sets of buttons, one on either side of the device, allow for a more comfortable side-grip and operation compared to the somewhat awkward top location of the **KoalaPad**'s single set. A retractable leg swings out of the bottom of the **ANIMATION STATION** providing a choice of either angled or flat desk-top orientations. As with the **KoalaPad**, the **ANIMATION STATION** may also be held in the hand quite comfortably. Another feature I really like is the **ANIMATION STATION**'s built-in stylus holder: a small detail, perhaps, but a nice touch for those of us who chronically lose such things. Another nice concept (which did not work on the unit we tested) is a switch which is supposed to let the **ANIMATION STATION** be used in place of a joystick with other software. As for performance, we were unable to detect any differences in responsiveness, sensitivity, resolution, or accuracy between the two devices and, in fact, they are quite interchangeable.

The software for both systems is also similar. Again, **SUNCOM** has attempted to add a few refinements: printer support, a selection of 4 fonts, and a unique feature for loading and manipulating a range of pre-defined shapes. Unfortunately, the printer routines have some bugs (the little horizontal lines in the header above were not on the screen), support only 2 interfaces (Cardco's, and Batteries Included's) and 3 printer types (Commodore, Gemini, and Epson). In addition, only large, full-page printouts are possible (we prefer the single/double size options of programs like **Doodle** and **Flexidraw**). Presumably, any of the generic printer support products coming out for the **KoalaPad** (including **Koala**'s own long awaited package) will also work with the **ANIMATION STATION**. The "shapes" feature is pretty interesting: with it you can choose from a set of pre-defined shapes (included are 2 sets of animals, 2 of vehicles, weapons, miscellaneous, characters, face parts, &



↑ **KoalaPad™** ↑ **Animation Station™**



plants), manipulate (rotate, flip, & color) a shape in a separate drawing area, and then move it to the main drawing for merging. One other improvement is the way the **ANIMATION STATION** menu forms a border around a window thru which you can still see much of the drawing you are working on (see photo).

Supplementary disks are planned by **SUNCOM** that will offer additional shape & font files, along with the ability to edit and save your own (a feature not supported by the included software).

SUMMARY: The **ANIMATION STATION**, is generally comparable to, and in some ways superior to, the **KoalaPad**. It has some bugs, but these are in the "extra" features not even available from the competition. We hope the bugs will be cleared up making this a truly top-notch product.



KOALA LIGHT PEN

Reviewed by: Benn Dunnington

no trace of
Gibson here.

\$99⁰⁰ from:

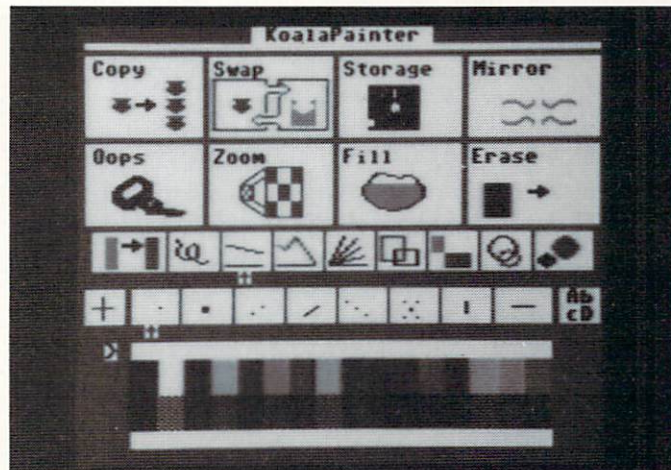
Koala Technologies Corp.
3100 Patrick Henry Dr.
Santa Clara, CA 95052
800-562-2327

In the world of professional football it is often said that despite season records and team standings, "any NFL team can beat any other NFL team on any given day". In the world of consumer computer products, I would propose a similar phrase which should be added to the list of universal truisms: "Any software house, regardless of past track record, can bring out a turkey at any time."

I don't want you to think I've been taking lessons from SCROOGE, but when I finally got a hold of the KOALA LIGHT PEN, I was soon heard mumbling from my inner office, "Bah! Humbug!".

First of all, as a quick look at the name suggests, this is NOT the much ballyhooed and far superior GIBSON LIGHT PEN SYSTEM that KOALA released in an Apple version, & has been promising for the C64 since January, 84!

GIBSON LIGHT PEN SYSTEM, KOALA LIGHT PEN, what's the difference you ask? Well, the pen itself is not the problem (it is actually a very nice pen, manufactured by the same company that produces INKWELL SYSTEMS' pen), the difference (and the entire source of my complaint) is in the accompanying software. The GIBSON LIGHT PEN SYSTEM which I saw demonstrated at Chicago CES, is a spectacular graphics package featuring on-screen "pull-down" (ala Macintosh) menus, and including five subsystems covering freehand sketching, template design & drafting, animation, music, and applications development. With all that, \$99.00 seemed almost too good to be true (and so it was). Apparently, Steve Gibson was either unable or unwilling to finish the C64 version for KOALA in time for the Christmas market (one story has it that Steve, who reportedly does not get along with the C64 very well anyway, crashed his system during development, somehow losing weeks of work in the process). Whatever the reason, KOALA, choosing profit as the better part of business, swapped-in a disappointing, re-hashed version of KOALA PAINTER by AUDIO LIGHT, INC. and has apparently scrubbed the GIBSON LIGHT PEN SYSTEM for the C64 indefinitely. "OK", you say, but isn't KOALA PAINTER a fine system itself, highly praised along with the KOALAPAD graphics tablet? Yes, we liked the tablet version very well when it first came out, and even in light of new products that have come along since, it would still rate 4 stars, but the KOALA LIGHT PEN version has 3 annoying traits that strip it right down to 2-star territory: 1) the cursor does not track the pen well unless the operator's movements are very slow and smooth, 2) the software seems to get confused, and inconsistently registers the pressing of the nose-switch (often 2 or 3 pushes required to activate a selection), 3) worst of all, the pen will not read position in any area darker than light gray, so you can't draw in or over most filled objects. (To try and fix this problem, a large blinking rectangle is provided as an alternate cursor to the crosshair, the idea being



The KOALA LIGHT PEN menu is very similar to that of KOALA's TOUCH TABLET: unfortunately, the similarity does not extend to include software quality.



to create an intermittent white area where the pen can get its bearings— unfortunately even this doesn't work most of the time, and it is nearly impossible to see where you're trying to go thru the blinking rectangle!). A few features have been added (most notably 8 unimpressive fonts for lettering) but these are small compensation for the overall frustration and disappointment of this product (& you still can't dump to your printer without buying additional software.)

In summary: Stay away from this product until KOALA sees the light and delivers the goods. In the meantime, you will find their KOALAPAD product much more satisfying, and a good value at prevailing prices.



ROBOTS OF DAWN

reviewed by: Ted Salamone

Classic science fiction and computer fantasy are beginning to merge into a single, highly interactive form of electronic entertainment. Combining the best works of Clarke, Asimov, and others with the relatively new format popularized by the advent of micros has become the most recent angle in the world of video adventuring.

Whether hi-res or text only, these hybrids hold the promise of greater things to come. Tapping the immense talent of world renowned writers elevates electronic brainteasers to work-of-art status.

One of the first on the market to achieve this quantum leap is **ROBOTS OF DAWN**, the Epyx all-text release for the Commodore 64. Based on Asimov's science fiction novel of the same name, this one is different from all the rest.

Gamers assume the identity of Elijah "Lije" Baley, the most respected detective on Earth, or any other planet for that matter. Summoned to Aurora to solve the "unsolvable" murder of a famed robotics designer, one Dr. Fastolfe, you must question the suspects, acclimate yourself to strange (very) surroundings, and remain objective about the case. The latter part isn't as easy as it sounds, for a friend from the past and a likeable (helpful too!) positronic humanoid robot are deeply involved in the intergalactic quagmire.

What's even worse is that Lije is acting as a private citizen, not a representative of Solaria's (Earth's) government. Don't expect too much help either; the commissioner (Wilson Roth) feels you're overrated and that this is just the thing to cut you down to size. And you thought you had troubles back on Earth!

Diplomacy, perseverance, insight, and intellect are all needed (in large doses) to get you through this one. Many factors must be considered and clues uncovered before making the accusatory report to Rutilar Horder, Chairman of the World Legislature on Aurora.

Complete with background and theme materials, **ROBOTS OF DAWN** is a challenge and a half. Scan the paper outtake for news of the murder, search the trans-space telegram for clues, and (practically) memorize the dossier on each of the suspects. That's just for starters.

Compare the responses from and the actions of the individuals with other information about them. Don't forget to question the suspects about each other, you'll be surprised at the things you can learn by adding two and two together. Establish the motive, clarify the method, and re-create the opportunity. Weed out the weak links and press onwards, for time is running short.

Mapping skills are important in **ROBOTS OF DAWN** for there are numerous locations to explore. Likewise there is a multitude of objects to investigate, use, and otherwise consider. Remember, overlook nothing!

Lije Baley, you are Earth's greatest living detective. Once again you have been summoned to an alien world to investigate a murder. This time you have come to the planet Aurora, and the victim is a friend of yours. Dr. Han Fastolfe is dead. That is all you know. Your investigation is unofficial, and being an Earthman, you may find people less than cooperative. Some may even attempt to halt your investigation prematurely - one way or another. You have been brought from the spaceport to Dr. Fastolfe's estate by an airfoil, which dropped you off and drove away. Good luck. (Type help if you need instructions).
You are in a living room. The floor is a smooth checkerboard of several shades of brown. A door to the north leads outside. Hallways lead off to the east and west. A trimensional viewer is here.

2e
This is a guest room. An exit is to the west, and the south wall shimmers slightly. A bed is here. Daneel is here.
2w
This is a north-south hallway. A guest room is to the east, other rooms are to the north and west. Daneel is here.
2v
This is a workroom. The door is to the east. A hyperwave screen is here. Daneel is here.
Tell me about screen.
You view hyperwave shows on it. Things like newscasts, sporting events, hyperwave dramas.
Tuse screen.
A 3-d image appears on the screen. What's showing is that hyperwave drama about you and the time you solved the murder of Gladia Delmarre's husband on Solaria.

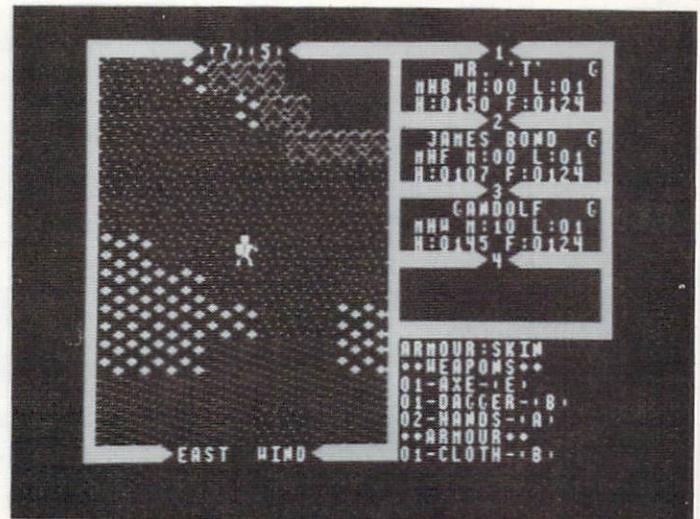
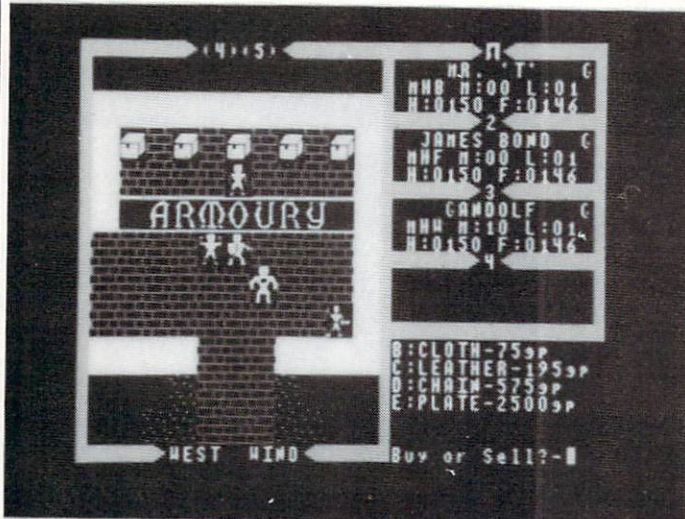
If a player manages to solve the crime, **ROBOTS OF DAWN** has still more to offer. Each game is different. Random events make the circumstances unique every time you start anew. (If a game is coming along well but there isn't time to finish it in a single sitting, just save it to disk for later recall. This in-progress suspension allows outer space dicks the opportunity to work with the same set of circumstances until the case is closed).

Of course there are hazards on Aurora, some of which can prevent you from solving a particular crime forever. Beware brave one, your life is on the line as well as your reputation and honor.

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EXODUS: ULTIMA III

reviewed by: Ted Salamone



As the third installment in the ULTIMA series by Richard Garriot, **EXODUS:ULTIMA III** has quite a heritage to live up to. Happily, Lord British's latest offering is also his best.

As with its forebears, compu-gamers select the video surrogate's profession (thief, cleric, fighter, etc.), race (human, elf, fuzzy, etc.), sex (there are THREE choices here), and attributes (strength, dexterity, intelligence, and wisdom). Unlike its "prequels" however, ULTIMA III allows up to four adventurers per gaming party. The versatility adds incredible depth of play and realism to this fantasy role playing sojourn through the troubled realm of Sosario.

It isn't necessary to have played ULTIMAs I and II to enjoy, or for that matter, do well at EXODUS; though the prior experience would certainly come in handy.

Combat and magic are crucial elements here. Ferocious (but dimwitted) orcs roam the open countryside in bands, pirates and cut-throats rule the waves. Other evil types include zombies, ghouls, men-o-war, golems, snatches, daemons, wyverns, and balrons. Take your pick, there's plenty to choose from!

Knowledge of, and experience with thaumaturgical expressions is the only way for a party to succeed. Clerics and wizards are worth more than their weight in platinum. So are thieves - good ones that is.

Guards, armorers, grocers, and healers are just a few of the townspeople you'll have the pleasure (?) of meeting. Just be on guard at all times, carry all the provisions possible, and keep the old eyes and ears open. (That is if your characters have them!).

Interacting and transacting with these "civilized" denizens is of the utmost importance, often being the difference between success and failure. Tongues can be loosened with glittering coin of the realm, though some advice is yours just for being a patient listener. All that's left to do after such a chat is decipher what you've heard.

The graphics are better than those from the previous outings; more colorful and detailed, with about the same level of animation (good for this type of game). The rightmost third of the screen displays the party's characteristics, status, and attributes on an individual basis. This setup, believe it or not, still leaves ample room for the adventure itself.

A haunting melody plays throughout the quest, though the soundtrack can be switched on or off at will. While the musical accompaniment mesmerized and entertained me; my wife, the real adventure player in the family, preferred the eerie silence. Well, to each his or her own.

EXODUS:ULTIMA III is action adventuring par excellence. Many wonderful hours will be spent unraveling its secrets. After all, who is EXODUS, from where does he hail, and what does he want? Only you can find the answers and put an end to this unspeakable evil once and for all.

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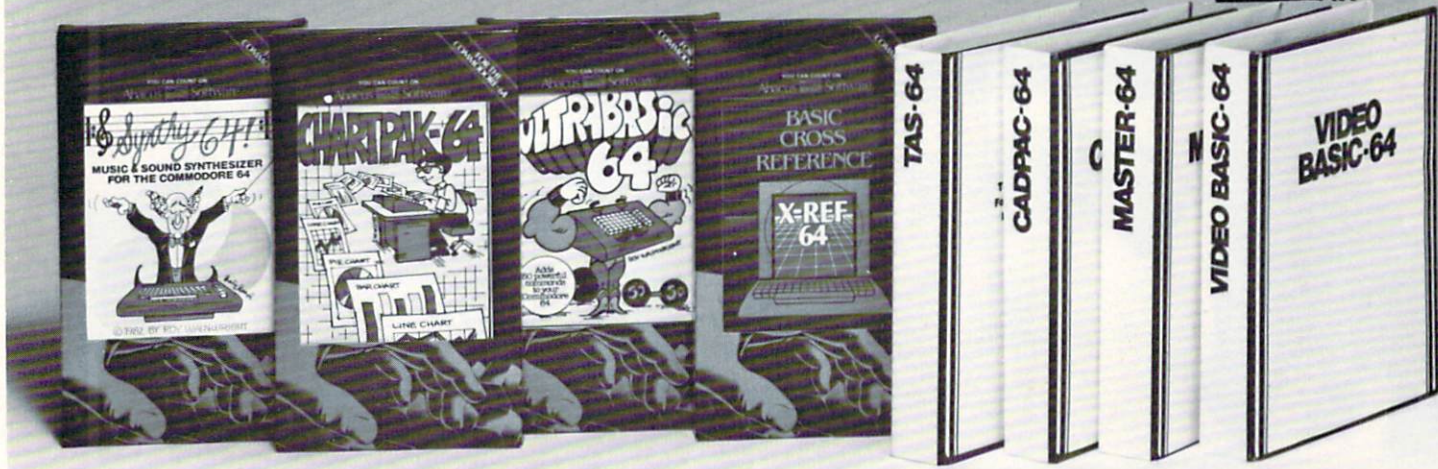
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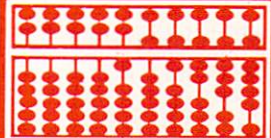
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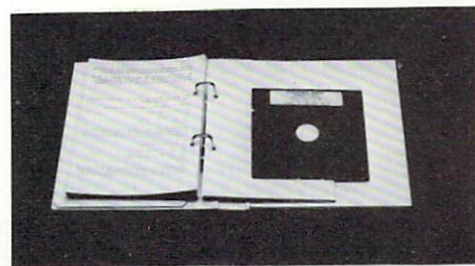
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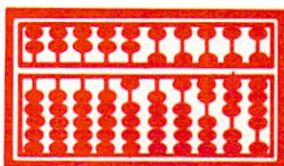
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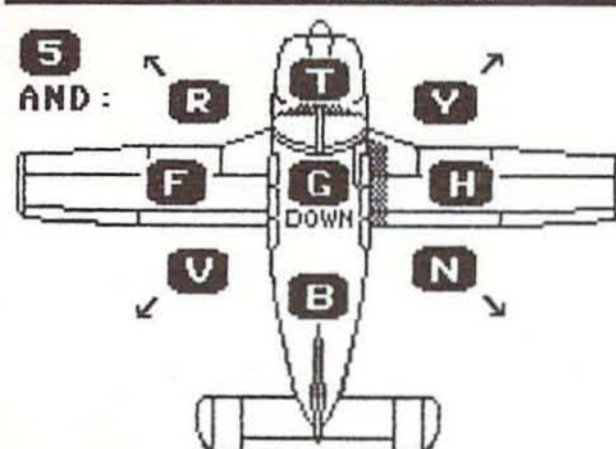
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F.....EDIT MODE TOGGLE
RETURN.....ADVANCE EDIT ARROW
↑.....BACK STEP EDIT ARROW
CTRL Z.....SAVE MODE LIBRARY
CTRL X.....LOAD MODE LIBRARY

MISCELLANEOUS CONTROLS

CTRL I.....LIGHTS
CTRL B.....ALTIM ADJUST
CTRL D.....HEADING INDICATOR ADJUST
CTRL F.....SELECT LEFT FUEL TANK
CTRL E.....SELECT RIGHT FUEL TANK
CTRL T.....TOGGLE CARB HEAT
CTRL M.....FULL LEAN (LEAN CUTOFF)
CTRL N.....RICH (NORMAL MIXTURE)
CTRL X.....MAGNETOS
x = 1, off; 2, right; 3, left;
4, both; 5, start.

RADIO ADJUSTMENT

SELECT RADIO, THEN ADJUST FREQUENCY USING < TO DECREASE, > TO INCREASE

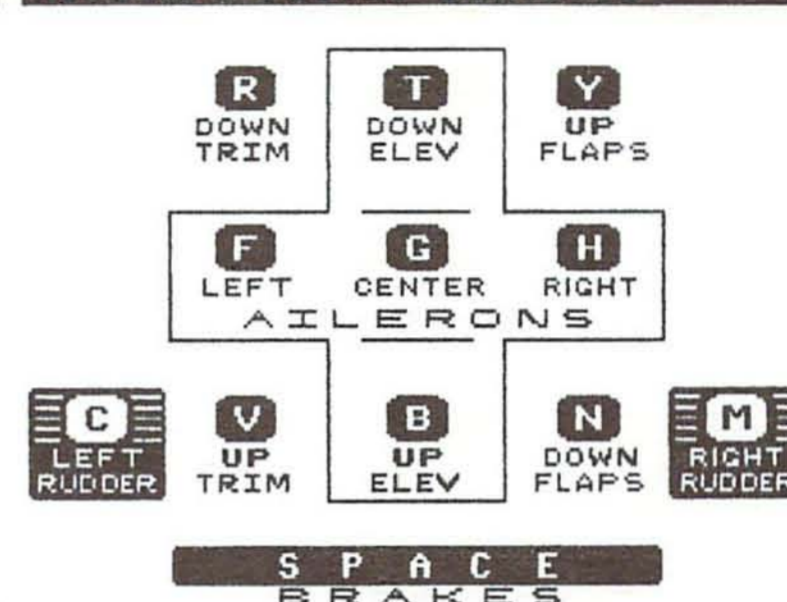
CTRL C.....COM RADIO, HI DIGITS
CTRL G.....COM RADIO, LO DIGITS

CTRL N.....SELECT NAV RADIOS, THEN:
1 CTRL N.....NAV 1 HI DIGITS
1 CTRL N.....NAV 1 LO DIGITS
2 CTRL N.....NAV 2 HI DIGITS
2 CTRL N.....NAV 2 LO DIGITS

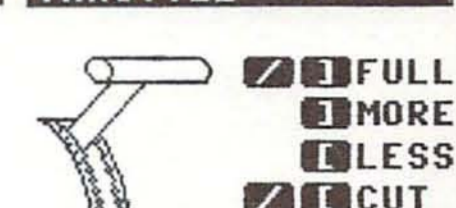
CTRL U1.....VOR OBS 1
CTRL U2.....VOR OBS 2

CTRL A.....ADF 1ST DIGIT
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(REPEAT X FOR DIGITS 2,3,4)

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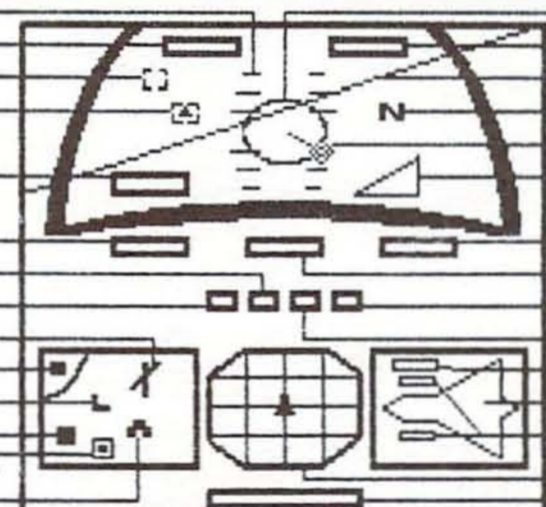
ERG-CARD™ FOR F-15 STRIKE EAGLE

MICROPROSE SOFTWARE 18616 BEAVER DAM RD. HUNT VALLEY, MD 21038

PITCH LINES
AIR SPEED (KNOTS)
AIR TARGET
MISSILE INDICATOR

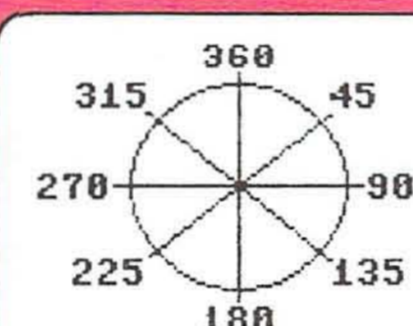
MESSAGE DISPLAY

MACH NUMBER/10
INFRA RED DETECTOR
RADAR DETECTOR
AIR FIELD
F-15 BASE
AIRCRAFT POSITION
NAVIGATION CURSOR
PRIMARY TARGET
S.A.M. SITE



AIR TO AIR RETICLE
ALTITUDE (FEET)
HORIZON
(N-A-V) STEERING CUE
AIR TO GROUND RETICLE
GROUND TARGET

POWER (%)
HEADING
LOW FUEL WARNING
LOW ALTITUDE WARNING
WEAPONS ARMED INDICATOR
WEAPONS STATUS
DROP TANKS
AIR COMBAT RADAR
REMAINING FUEL



AUTHENTICATION CODES

0-B 8-I
1-C 9-K
2-H 10-F
3-P 11-D
4-B 12-M
5-J 13-P
6-H 14-E
7-H 15-L

EJECT



E.C.M.
& CHAFF



AFTER
BURNER



SPEED
BRAKE



FRONT/REAR VIEW

SPACE

THROTTLE



RADAR
RANGE



DROP
TANK



ARM
S.R.M.



ARM
M.R.M.



GAME
PAUSE



POSITION
NAV CRSR



POSITION
NAV CRSR



POSITION
NAV CRSR



f1



f2



f3



f4



f5



f6



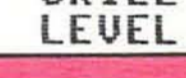
f7



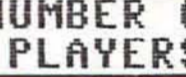
f8



SKILL LEVEL



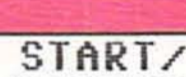
NUMBER OF
PLAYERS



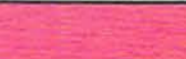
START/
RESTART



START/
RESTART



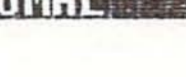
START/
RESTART



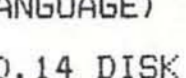
START/
RESTART



START/
RESTART



START/
RESTART



ERG-CARD™ FOR COMAL 0.14

COMAL KEYWORDS

//	CON	ENDFOR	FOR	LOG	POKE	SGN	UNIT
ABS	COS	ENDFUNC	FUNC	MOD	PRINT	SIN	UNTIL
AND	DATA	ENDIF	GOTO	NEW	PROC	SIZE	USING
APPEND	DEL	ENDPROC	IF	NOT	RANDOM	SQR	WHEN
ATN	DELETE	ENDWHILE	IN	NULL	READ	STATUS#	WHILE
AUTO	DIM	ENTER	INPUT	OF	REF	STOP	WRITE
BASIC	DIV	EOD	INT	OPEN	RENUM	SYS	ZONE
CASE	DO	EOF	KEY#	OR	REPEAT	TAB	
CAT	EDIT	ESC	LABEL	ORD	RESTORE	TAN	
CHAIN	ELIF	EXEC	LEN	OTHERWISE	RND	THEN	
CHR#	ELSE	EXP	LET	OUTPUT	RUN	TO	
CLOSE	END	FALSE	LIST	PASS	SAVE	TRAP	
CLOSED	ENDCASE	FILE	LOAD	PEEK	SELECT	TRUE	

COLORS

#	COLOR	CHR#
0	BLACK	144
1	WHITE	5
2	RED	28
3	CYAN	159
4	PURPLE	156
5	GREEN	30
6	BLUE	31
7	YELLOW	158
8	ORANGE	129
9	BROWN	149
10	LIGHT RED	150
11	DARK GRAY	151
12	MEDIUM GRAY	152
13	LIGHT GREEN	153
14	LIGHT BLUE	154
15	LIGHT GRAY	155

HIGH RES AND

TURTLE GRAPHICS	
BACK	PENCOLOR
BACKGROUND	PENDOWN
BORDER	PENUP
CLEAR	PLOT
DRAWTO	PLOTTEXT
FILL	RIGHT
FORWARD	SETGRAPHIC
FRAME	SETHEADING
FULLSCREEN	SETTEXT
HIDETURTLE	SETXY
HOME	SHOWTURTLE
LEFT	SPLITSIZE
MOVETO	TURTLESIZE

SPRITES

DATA	
COLLISION	DEFINE
HIDESPRITE	IDENTIFY
PRIORITY	SPRITEBACK
SPRITECOLLISION	SPRITECOLOR
SPRITEPOS	SPRITESIZE

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LANGUAGE)
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ERG-CARDSM REFERENCE CARDS

(DO-IT-YOURSELF SIDE)

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CYBERWORLD \$39.95

This five-screen arcade adventure packs the computer with intense graphics and sound! You are a special Cyberleague agent in a universe full of hostile aliens and vicious robots. Joystick and keyboard transport you through 3-D rooms, space barriers, fleets of invaders, and warship-ridden quadrants of space. Over 100 sprites, 8 new character sets, and dozens of mind-boggling sound effects make up this multi-layered adventure. Animation, action, and strategy all combined into a game so extensive that two disk sides are jammed with game programs and data! Reach the ultimate rank of admiral and you may carve a niche in the permanent high-score list. A full-size book quality manual with full-color covers is included to guide you through your most exciting game experience.



Perplexian Challenger \$29.95

The incredibly responsive three-axis joystick control of a space fighter is in your hands. Split screen graphics provide a continuous display of your ship's instrumentation, as well as a three-dimensional, animated view of space.

You, as a pilot, must utilize lightning fast reflexes to destroy invading ships, and avoid their return fire. Simultaneously, you must maneuver your ship to capture space debris that remains from the explosions.

Outstanding graphics features include smooth 3-D rotations, split screens, and the most incredible high-resolution hyperspace sequence ever produced.

Programmed entirely in machine language, this action-strategy game is guaranteed to blow you away.

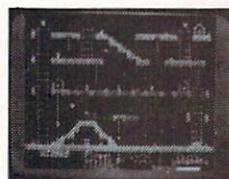
All the professional features you expect are included: automatic self-demo, high score retention, pause, and provisions for 1 to 4 players. Add to this, features you don't expect like easy-loading, and music during the load. Perplexian Challenger is a game that brings the arcade experience to your home.

Wizard \$39.95

Jump from ropes to ladders, dodge plummeting boulders and duck under deadly arrows in your quest for sparkling diamonds, gleaming bars of gold, and glistening pearls. With joystick in hand you must explore forty dazzling screens, each a new and exciting adventure. Take the key to unlock the doorway to your next spine-tling level. Each key restores your magical powers, allowing you to cast over ten different spells. With these magic spells you have the power to overcome vicious creatures, terrifying traps, and perilous plunges.

Your Wizard is realistically animated in every possible direction. Dozens of movements are possible — jump over burning fires, shimmy up or down ropes and ladders, even slip down treacherous sliding staircases! Magic portals move your Wizard through midair and protect you from a myriad of fully-animated fiendish monsters. Catch an elevator to the top of the screen and dart through sliding gates in your quest for magic and treasure.

Wizard's fascinating variety of screens are sure to please and entertain, and of course you can build an unlimited number of your own levels using the construction set provided with your game.



Gothmog's Lair \$39.95

Real-time adventure excitement at its best. Solve countless puzzles and slay over a dozen monsters by using the huge vocabulary of over 200 words. Two challenging difficulty levels await you with over 80 areas, each fully described in Old English script.

Menacing monsters, kniving villains, tattered code books and treacherous terrain are just a few of the situations you must overcome in your quest for the thirteen priceless treasures. More than seventy objects are invaluable to you in your search for glory and wealth!

A full-size, thoroughly illustrated manual is included. Featuring color front and back, book quality, and a fold-out map, this "extra" further extends the professionalism of this game. The following are quotes from unsolicited testimonials sent to us by adventurers in Gothmog's Lair:

"I have extremely enjoyed Gothmog's Lair, and plan to buy more adventure games."

Scott Tulman
Memphis, TN

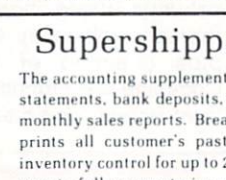
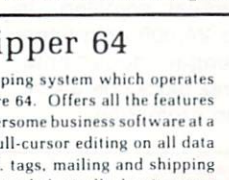
"Gothmog's Lair is the best adventure I've ever played."

Dennis Manocchio, Jr.
Saratoga, CA



PROFESSOR \$34.95

An in-depth self-tutorial for the Commodore 64 on a two-sided disk. This menu-driven tutorial covers every aspect of your C-64—BASIC, keyboard, sound, music, simple and advanced graphics. Quizzes test your comprehension at the end of many lessons! On-screen illustrations, sound effects and full-color interactive graphics make learning easy and interesting. The PROFESSOR is your ONLY choice for an all-in-one, thorough tutorial about the Commodore 64!



Supershipper 64

A complete multi-printer shipping system which operates on the inexpensive Commodore 64. Offers all the features of more expensive, more cumbersome business software at a low, low price. Full-screen, full-cursor editing on all data entry. Prints invoices, C.O.D. tags, mailing and shipping labels. Sorts your customer list alphabetically, by city/state or by salesperson. Keeps complete records of all invoices and accounts on disk — up to 800 accounts per disk! Automatic backups, product charts and many other features are also included.



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The accounting supplement to the Supershipper 64. Prints statements, bank deposits, past due accounts and daily or monthly sales reports. Breaks down sales commissions and prints all customer's past transactions. Also provides inventory control for up to 200 different products. The only way to fully computerize your business!



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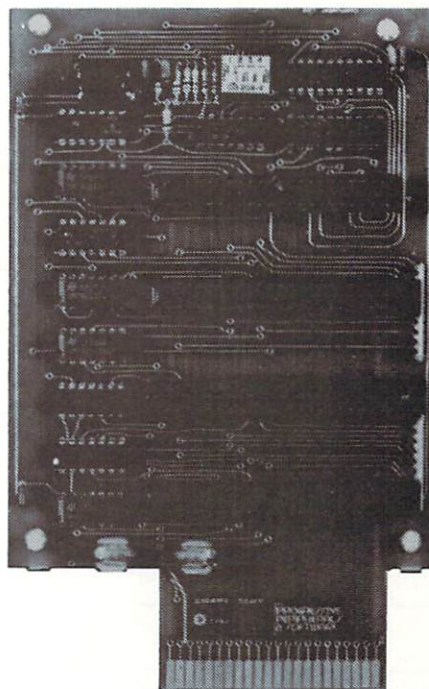
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*Sorcerer's -
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1701
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Auto Run Boot Maker

Auto Run Boot Maker will load and auto run your basic or machine language programs.

\$19.95



\$19.95

DMS-Errors 20,21,22,23,27 & 29
Format Single Tracks
Read Disk Errors

1/2 Track Reader-read and select
1/2 track.

1/2 Track Formatter-Format a
disk with 1/2 tracks. This is
where the next protection
schemes are coming from.

Drive Mon-Disk Drive
assembler/disassembler. For
your 1541.

The Doc-Disk Doctor that reads
code under errors.

Sync Maker-Place a sync mark
on any track out to 41. Also
used for protection.

Sync Reader-Check for Sync
bits on any track out to 41.

Change Drive No.-Changes
drive number (7-30).

Disk Logger-Finds starting track,
sector; start and end addresses.

Disk Match-Compare any two
diskettes. Byte for Byte.

New Wedge-Easier to use DOS
wedge.

ID Check-Check ID's on any
track.

Unscratch-Restore a scratched
file.

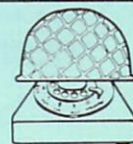
View RAM-Visual display of the
free and used sectors on a
diskette.

Read / Write Test-1541
performance test.

Repair a track-Repair a track
with checksum errors. Reads
code under errors and restores
track.

Fast Format-Format a disk in
just 10 seconds (with verify!).

WAR GAMES AUTODIALER



- 1-**Auto Dial** will automatically dial a set of numbers you choose.
- 2-**Review Numbers** will review numbers that were answered by a computer.
- 3-**Save Numbers** will save numbers where a computer answered.
- 4-**Hardcopy of Numbers** will print out list of numbers where a computer answered.
- 5-**LOAD Numbers** will load in numbers to continue where it left off.
- 6-**Continue** will pick up dialing where it was interrupted.

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99.9% Effective!

- **3 Minute** copy program
- Copies Bit by Bit
- Eliminates worries of all
Commodore DOS errors
- Very simple to use
- Half tracks
- 100% machine language
- Will not knock disk drive
- Copies quickly
- Writes errors automatically
20, 21, 22, 23, 27 & 29
- Errors are automatically
transferred to new disk

- Copies identical syncs
- Supports use of two disk
drives
- Unlocks disks to make
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- No need to worry about
extra sectors
- This program covers all the
latest protection schemes.

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BULLETIN BOARD

Set up and operate your own bulletin board with a single 1541 disk drives. This one has all the features and you can customize it easily yourself.

- | | |
|-------------------------|--------------------------|
| 1-RUN MEGASOFT BBS | 9-WRITE OPENING MESSAGE |
| 2-CREATE MEGA FILES | 10-READ LOG |
| 3-ADD TO SYSOP'S CORNER | 11-CYCLE LOG |
| 4-NEW SYSOP'S CORNER | 12-READ DOWNLOAD FILE |
| 5-READ MESSAGES | 13-SCRATCH DOWNLOAD FILE |
| 6-SCRATCH MESSAGE | 14-ADD TO OTHER SYSTEMS |
| 7-CYCLE MESSAGES | 15-CREATE OTHER SYSTEMS |
| 8-READ SYSOP MESSAGES | |

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Two Drive System: Includes everything listed above plus direct file transfer, dule passwords, for signon and updown load sections and many more options!

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This book "**BLOWS THE LOCKS OFF**" protected DISKS, CARTRIDGES, and TAPES! Protection "secrets" are clearly explained along with essential information and procedures to follow for breaking protected software. An arsenal of protection breaking software is included with all listings, providing you with the tools needed! Programs include high speed error check/logging disk duplicator... disk picker... disk editor... Cartridge to disk/tape saver and several others for error handling and advanced disk breaking. The cartridge methods allow you to save and run cartridges from disk or tape! The tape duplicator has never been beaten! This manual is an invaluable reference aid including computer and disk maps, as well as useful tables and charts. (212 pages 11 programs)

C64 Book only \$19.95 US
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THIS MANUAL DOES NOT CONDONE PIRACY

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Years Subscription

Allegro

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Allegro (formerly called PASS) is a professional quality sound synthesis package for the Commodore 64.

Allegro is an electronic accompanist. As well as a tool for everyone who likes music. The complete manual contains tutorials on music notation and sound synthesis for beginners, as well as a quick reference guide for advanced users. You can start using over 40 built-in instruments immediately, and later learn to create new ones never heard before.

Allegro is a programming utility. Allegro greatly simplifies the chore of programming sounds and music on the Commodore 64. Create soundtracks using simple PASS notation, then easily add the compact code to your BASIC programs. A single command starts the music playing — while your program continues to run!

Allegro is a record album. The Allegro disk contains over half an hour of sample music and sound effects, from pieces by Bach, Beethoven and Chopin to experimental compositions by the creator of Allegro, Bob Landwehr.

Allegro is a powerful digital sequencer. A unique kit of sophisticated tools gives you complete control over:

- Three independent voices
- Nearly 6000 notes and over 40 sequences using 85 different instruments in memory at one time
- Tempo from 40 M.M. as high as 1000 M.M.
- Exclusive phaser and heavymetal effects
- Filter controls
- Vibrato, pulse-width sweeps, wah-wah, repeats, sequencing commands, echo, staccato, ties, and more

MSD Sure Copy

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- Copy Protected Disk
- Copy Files
- Format a Disk
- Change Disk Name
- Quit
- Copy Unprotected Disk
- Scratch a File
- Rename a File
- View Directory

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Sure Copy will put all errors automatically on disk: 20, 21, 23, 27 and 29's.

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You no longer need to be an EGGHEAD to read Machine Language.

- Translates any machine language program into easy-to-read English descriptions with complete explanations of each command!
- Makes complete notations of all important memory locations accessed by the program! (SID, VIC, MOS, KERNAL, etc.)
- Gives you three ways of accessing programs:
 - 1) Will read and list programs from DISK
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 - 3) Direct user input (from magazines, etc.)
- Can be used to locate and examine any machine language program's protection routines!
- Can be used to easily break apart machine language programs for study and examination!
- Printer option for complete hard copy listings!

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SWIFTERM 3.0

FINALLY a terminal program that's not only easy but fun. There are several notable differences between **Swifterm** and the other popular terminal programs. First there's an incredibly small amount of documentation necessary to operate **Swifterm** efficiently. **Swifterm** is so user friendly that it doesn't require reading a two-inch-thick book before you start using it. Options include: terminal to terminal direct file transfer . . . auto dial and redial . . . standard and Commodore . . . askii transfer . . . printer dump . . . 300 and 1200 BAUD . . . and a big 29K buffer for file transfer. **Swifterm** can be used with all the popular bulletin board news services and compuserve. Step by step examples are also included to help in the up down load section for beginners.

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PASCAL

The 3rd in a Continuing
Series of Articles on
Programming Languages

BY MARK A. BROWN

THIS IS THE 'SIEVE OF ARISTOTHENES' PROGRAM USED TO TEST THE RELATIVE SPEED OF EXECUTION AND COMPACTNESS OF CODE OF KMM PASCAL VERSUS OXFORD PASCAL:

```
program psieve (input, output);
const n=1000;
var next,j : integer;
    sieve : array [1..n] of boolean;
begin
  for next:=2 to n
  do sieve [next]:=true;
  writeln('array cleared');
  for next:=2 to n
  do begin
    if sieve[next]
    then begin
      write (next:5);
      j:=next;
      repeat
        sieve [j] := false;
        j := j + next
      until j>n
    end
  end
end.
```

PASCAL IS ONE OF THE MOST CONTROVERSIAL OF ALL COMPUTER LANGUAGES. ALMOST EVERYONE INVOLVED IN PROGRAMMING HOLDS AN EXTREME OPINION, EITHER BELIEVING IT TO BE HOPELESSLY STRICT AND DEMANDING, OR REVERING IT AS THE ONLY 'REAL' PROGRAMMING LANGUAGE IN EXISTENCE. THE TRUTH IS, OF COURSE, SOMEWHERE IN BETWEEN.

WHEN PASCAL WAS INTRODUCED BY DR. NIKLAUS WIRTH IN 1970, IT OVERCAME SOME SERIOUS SHORTCOMINGS INHERENT IN THE COMPUTER LANGUAGES AVAILABLE AT THE TIME. MOST HAD EITHER EVOLVED OUT OF MACHINE CODE AND WERE CONSEQUENTLY FRIENDLIER TO THE MACHINES THAT RAN THEM THAN THE PROGRAMMERS THAT USED THEM, OR WERE (LIKE BASIC AND FORTRAN) LITTLE MORE THAN TOOLS TO TRANSLATE PROBLEMS INTO SOMETHING THE COMPUTERS COULD COMPREHEND WITH MINIMAL EXPERTISE ON THE PART OF THE USER. DR. WIRTH BEGAN WITH ONE OF EUROPE'S MOST POPULAR COMPUTER LANGUAGES, ALGOL, AND REPLACED ITS CRYPTIC SYMBOLIC CODES WITH ENGLISH WORDS AND PHRASES. HE THEN TOOK THE CONCEPT OF STRUCTURED PROGRAMMING AND PUT PASCAL TOGETHER IN SUCH A WAY THAT STRUCTURED PROGRAMMING TECHNIQUES WERE REINFORCED. THE RESULT WAS A LANGUAGE THAT WAS EASILY UNDERSTOOD BY HUMANS BUT WHICH FOLLOWED THE LOGICAL PROCESSES OF MACHINES. IT WAS QUICKLY ADOPTED BY A GREAT MANY PROFESSIONAL PROGRAMMERS AND EDUCATORS WHO HAILED IT AS A QUANTUM LEAP FORWARD IN MAN'S RELATIONSHIP TO COMPUTERS, WHICH IT WAS.

HOWEVER, PASCAL STILL HAD PROBLEMS. IT REQUIRED TEDIOUS DEFINITION OF ALL CONSTANTS AND VARIABLES; THERE WERE NO STANDARD INPUT AND OUTPUT ROUTINES; THERE WERE NO PROVISIONS FOR HANDLING CHARACTER STRINGS; IT LACKED COMMANDS TO HANDLE THE GRAPHICS AND SOUND CAPABILITIES OF THE NEW GENERATION OF COMPUTERS. AS THE LANGUAGE MATURED, A GREAT MANY OF PASCAL'S SHORTCOMINGS WERE TAKEN CARE OF IN LATER IMPLEMENTATIONS OF THE LANGUAGE.

THERE ARE MANY GOOD REASONS WHY PASCAL COULD BE THE LANGUAGE FOR YOU. COMPATIBILITY WITH WORK OR SCHOOL IS ONE. MANY APPLICATIONS PROGRAMS HAVE BEEN WRITTEN IN PASCAL, AND IF YOU ARE USING AND MAINTAINING A PASCAL SYSTEM AT WORK, YOU WILL PROBABLY WANT TO USE PASCAL AT HOME, TOO. THERE

**PASCAL IS ONE OF THE MOST
CONTROVERSIAL OF ALL COMPUTER
LANGUAGES. ALMOST EVERYONE
INVOLVED IN PROGRAMMING
HOLDS AN EXTREME OPINION.**

ARE ALSO THOUSANDS OF FREE PUBLIC DOMAIN PASCAL PROGRAMS AVAILABLE, THOUGH MOST WILL REQUIRE AT LEAST SOME TRANSLATION TO RUN ON THE COMMODORE 64. A GREAT MANY COLLEGES TEACH THE CORE OF THEIR PROGRAMMING COURSES IN PASCAL, AND IT IS THE LANGUAGE REQUIRED FOR ADVANCED COMPUTER PLACEMENT ON THE SAT COLLEGE ENTRANCE TESTS.

PASCAL ALSO HAS A COUPLE OF INTERESTING FEATURES THAT HAVE NEVER MADE IT INTO OTHER LANGUAGES. ONE OF THESE IS ITS DATA MANIPULATION SLEIGHT-OF-HAND WITH VARIANT RECORDS. IF YOUR APPLICATIONS TEND TO LEAN HEAVILY TOWARD SERIOUS DATA HANDLING, THIS FEATURE ALONE MIGHT MAKE PASCAL WORTH CONSIDERATION.

ONE OF THE MOST FERVENT ARGUMENTS LEVELED AGAINST THE LANGUAGE, THE NECESSITY TO DEFINE ALL VARIABLES BEFORE THEY ARE USED, CAN PARADOXICALLY BE ONE OF PASCAL'S GREATEST ASSETS! PASCAL ALLOWS THE DEFINITION OF NEW VARIABLE TYPES, WHICH CAN THEN BE USED TO LIMIT AND SCRUTINIZE VARIABLE CONTENTS IN UNIQUE AND INTERESTING WAYS. FOR EXAMPLE, THESE LINES

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TYPE WEEKDAY=(MONDAY, TUESDAY, WEDNESDAY,
THURSDAY, FRIDAY);
VAR SCHOOLDAY:WEEKDAY;
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CREATE A NEW TYPE OF VARIABLE CALLED WEEKDAY THAT CAN ONLY HOLD THE VALUES MONDAY THROUGH FRIDAY, AND THEN DEFINES A VARIABLE CALLED SCHOOLDAY THAT IS OF TYPE WEEKDAY. THIS GIVES TREMENDOUS CONTROL OVER DATA INPUT, AND RELATIONAL OPERATORS ALLOW COMPARISONS AMONG VARIABLES OF THE SAME ENUMERATED TYPE, MAKING FOR SOME POWERFUL DATA COMPARISON TECHNIQUES.

PASCAL CONTINUED

THERE ARE ALSO THOUSANDS OF FREE PUBLIC DOMAIN PASCAL PROGRAMS AVAILABLE, THOUGH MOST WILL REQUIRE AT LEAST SOME TRANSLATION...

PASCAL MAY ALSO HAVE A SPEED ADVANTAGE OVER YOUR CURRENT LANGUAGE. BASIC IS AN INTERPRETED LANGUAGE; THAT IS, THE PROGRAM STEPS ARE INTERPRETED A STEP AT A TIME AS THE PROGRAM RUNS. PASCAL IS COMPILED; IT IS CONVERTED COMPLETELY INTO CODE WHICH CAN BE EXECUTED MUCH MORE QUICKLY BY THE COMPUTER. WHILE THIS MEANS THAT YOU CANNOT WRITE PROGRAMS INTERACTIVELY (RUNNING THE PROGRAM SECTIONS AND DEBUGGING AS YOU GO), ONCE THEY ARE WRITTEN AND COMPILED THEY WILL RUN MUCH FASTER.

AND LET'S BE HONEST. THERE IS STILL A GREAT DEAL OF PASCAL CHAUVINISM OUT THERE. JUST HAVING YOUR COMPUTER SPEAK PASCAL SAYS "THIS IS A REAL COMPUTER. DON'T CALL IT A TOY."

PASCAL ALSO HAS A COUPLE OF INTERESTING FEATURES THAT HAVE NEVER MADE IT INTO OTHER LANGUAGES.

THERE ARE CURRENTLY AT LEAST FIVE VERSIONS OF PASCAL AVAILABLE FOR THE COMMODORE 64. ONE, TURBO PASCAL, REQUIRES THAT YOU HAVE COMMODORE'S CP/M CARTRIDGE. PASCAL 64 FROM ABACUS SOFTWARE IS A GERMAN IMPORT THAT REPLACES THEIR ZOOM PASCAL PACKAGE, AND IS NOT YET AVAILABLE FOR REVIEW. KYAN PASCAL FROM KYAN SOFTWARE IS ALSO BRAND NEW AND UNAVAILABLE AT PRESTIME. HOPEFULLY, WE CAN REVIEW THE CP/M VERSION AND THE TWO NEWCOMERS IN A FUTURE ISSUE. THE TWO WE WILL BE TAKING A CLOSER LOOK AT ARE KMMM PASCAL FROM WILSERV INDUSTRIES, AND OXFORD PASCAL, A BRITISH IMPORT AVAILABLE IN THE USA FROM LIMBIC SYSTEMS.

THERE ARE THREE IMPORTANT PARTS TO A PASCAL SYSTEM; THE EDITOR, THE COMPILER, AND THE RUN-TIME PACKAGE TRANSLATOR. THE EDITOR IS WHAT ALLOWS YOU TO EDIT AND SAVE PASCAL SOURCE LISTINGS, THE 'PROGRAMS' THAT HUMANS CAN READ. THE COMPILER TRANSFORMS THE SOURCE LISTING INTO AN INTERMEDIATE FORM CALLED P-CODE, OR PSEUDO-CODE, WHICH CAN THEN BE RUN BY THE PASCAL SYSTEM. THE RUN-TIME PACKAGE TRANSLATOR (WHICH IS NOT INCLUDED WITH ALL SYSTEMS) IS VERY IMPORTANT, BECAUSE IT GENERATES A PROGRAM THAT WILL RUN ON OTHER COMPUTERS WITHOUT THE PASCAL LANGUAGE.

KMMM PASCAL IS DEFINITELY THE MORE ESTABLISHED OF THE TWO SYSTEMS WE'LL BE LOOKING AT. IT WAS ORIGINALLY IMPLEMENTED ON THE PET COMPUTER, AND HAS GONE THROUGH MANY REFINEMENTS AND IMPROVEMENTS. THE LEVEL IV VERSION NOW MARKETING FOR THE COMMODORE 64 HAS BEEN FIELD TESTED AND PROVEN FOR SEVERAL YEARS BY THOUSANDS OF USERS ON BOTH THE PET AND COMMODORE 64 COMPUTERS. KMMM PASCAL'S ORIGINATING COMPANY, WILSERVE INDUSTRIES, IS SMALL AND PERSONAL AND PROVIDES EXCELLENT SUPPORT THROUGH A USERS GROUP ON-LINE BULLETIN BOARD, AND EXTREMELY INEXPENSIVE UPGRADES. THE SYSTEM USES SECURITY KEY PROTECTION, WHICH MEANS YOU CAN MAKE BACK-UP COPIES OF THE DISK FOR YOURSELF, BUT YOU MUST HAVE THE HARDWARE SECURITY KEY PLUGGED INTO YOUR CASSETTE PORT IN ORDER FOR THE COMPILER TO RUN. THE KMMM PASCAL SYSTEM IS CO-RESIDENT WITH BASIC (YOU CAN SWITCH BACK AND FORTH AT WILL) AND THE DOS WEDGE FOR DISK OPERATIONS.

THERE ARE THREE IMPORTANT PARTS TO A PASCAL SYSTEM; THE EDITOR, THE COMPILER, AND THE RUN-TIME PACKAGE TRANSLATOR.

THE PACKAGING IS NOT SLICK. THE DOCUMENTATION COMES IN A STANDARD REPORT BINDER WITH A HAND-LETTERED COVER; THE DISK IS INSIDE IN A RING-BINDER VINYL SLEEVE. THE DOCUMENTATION ITSELF IS CLEARLY AND PROFESSIONALLY PRINTED WITH SEPARATE SECTIONS COVERING THE EDITOR (WHICH IS THE SAME ONE SUPPLIED WITH A COMPANION ASSEMBLER PACKAGE) AND THE COMPILER. THE LAST PAGE CONTAINS A SUMMARY OF THE EDITOR'S COMMANDS. THE COMPILER SECTION NEATLY LISTS THE DEVIATIONS FROM STANDARD PASCAL AND THE ADDITIONS PROVIDED. THE DOCUMENTATION ASSUMES REAL FAMILIARITY WITH THE PASCAL LANGUAGE, AND CONCENTRATES ON THE SPECIFICS OF KMMM PASCAL. SEVERAL USEFUL AND INFORMATIVE DEMO PROGRAMS AND HELP FILES ARE INCLUDED ON THE DISK.

THE POWERFUL EDITOR INCLUDES TWO MODES OF OPERATION, THE 'WINDOW' MODE, WHICH IS A CURSOR-CONTROLLED, BI-DIRECTIONALLY SCROLLING FULL SCREEN EDITOR, AND A 'COMMAND' MODE, WHICH PROVIDES WORD-PROCESSOR-LIKE SEARCH, REPLACE, AND MANIPULATION FEATURES. THE WINDOW-MODE USES FREE-FORMAT INPUT OF TEXT, JUST AS YOU SEE MOST PASCAL LISTINGS. THE COMMAND MODE REFERENCES LINE

more...

PASCAL CONTINUED

NUMBERS, WHICH IT PROVIDES. TWO VERSIONS OF THIS EDITOR ARE SUPPLIED ON THE DISK. ONE INCLUDES AN ERROR-CHECKING ROUTINE WHICH CAN CHECK SOURCE CODE FOR CORRECT SYNTAX, A REAL TIME-SAVER IN A COMPILED LANGUAGE. THE OTHER IS MUCH SMALLER AND ALLOWS THE EDITING OF LONGER SOURCE FILES. A USEFUL FEATURE IS THE ABILITY TO LOAD AND SAVE BOTH COMMODORE-BASED AND ASCII FILES, WHICH ALLOWS COMPATIBILITY WITH OTHER SYSTEMS.

THE COMPILER IS QUICK AND EFFICIENT. UNFORTUNATELY, IT DOES NOT SUPPORT THE FULL STANDARD PASCAL; THERE IS A LIST OF DEVIATIONS IN THE DOCUMENTATION. THE EVEN HALF-DOZEN UNIMPLEMENTED FUNCTIONS ARE: GOTO, SET, WITH, PACK, UNPACK, AND PAGE. MOST ARE NON-CRITICAL, BUT IT IS A SHAME THAT THEY ARE NOT INCLUDED. (WILLI KUSCHE, THE AUTHOR OF KMMM PASCAL ADDS, "YET!".) THERE ARE A FULL SET OF UCSD-COMPATIBLE STRING EXTENSIONS, HOWEVER, WHICH ADDS IMMEASURABLY TO KMMM'S POWER AND ALMOST DOES AWAY WITH THE NEED FOR 'PACK' AND 'UNPACK'. ALSO INCLUDED ARE LINKS TO MACHINE LANGUAGE, HEXADECIMAL NUMBERS, AND DISK OPERATIONS. GRAPHICS AND SOUND ARE NOT SUPPORTED, PROBABLY DUE TO KMMM PASCAL'S HERITAGE FROM THE PET. IT SHOULD BE NOTED THAT THIS COMPILER WILL NOT EXECUTE A P-CODE PROGRAM IN MEMORY. ALL PROGRAMS MUST BE PROCESSED THROUGH THE TRANSLATOR BEFORE THEY CAN BE RUN.

THE TRANSLATION PROGRAM IS EXCELLENT, PROVIDING A RUN-TIME PACKAGE THAT IS COMPACT AND FAST. IN TESTS USING THE 'SIEVE OF ARISTOTHESES' PROGRAM (SEE LISTING) IT PRODUCED CODE WHICH WAS ABOUT 25% MORE COMPACT AND THREE TO FOUR TIMES FASTER THAN OXFORD PASCAL. THIS IS VERY IMPORTANT IN MEMORY

AND SPEED INTENSIVE PROGRAMS.

OXFORD PASCAL IS A NEWCOMER BY COMPARISON. HOWEVER, IT ORIGINATES FROM OXFORD COMPUTER SYSTEMS, LTD., OF GREAT BRITAIN, THE DEVELOPERS OF THE PETSPEED COMPILER FOR THE PET AND COMMODORE 64, SO THEY HAVE YEARS OF COMMODORE EXPERIENCE TO DRAW UPON. SINCE THE SOURCE COMPANY IS IN ENGLAND, IT MIGHT BE DIFFICULT TO OBTAIN IN-DEPTH USER SUPPORT HERE IN THE STATES. OXFORD PASCAL COMES ON A CLONEABLE DISK IN A NICE PROFESSIONAL-LOOKING PACKAGE ALONG WITH A SPIRAL-BOUND USERS' MANUAL. THE MANUAL IS DIVIDED INTO SEPARATE TUTORIAL AND REFERENCE SECTIONS AND INCLUDES A GOOD TABLE OF CONTENTS. THINGS ARE NOT ALL THAT HARD TO FIND IN THE MANUAL, BUT AN INDEX AND QUICK REFERENCE CHARTS WOULD HAVE MADE IT MUCH EASIER TO REFER BACK TO WHILE PROGRAMMING. THERE IS ALSO A FULL PAGE OF ERRATA NEAR THE FRONT THAT MUST BE TAKEN INTO CONSIDERATION WHEN READING THE REST. THE TUTORIAL SECTION INCLUDES MANY PROGRAMMING EXAMPLES, SOME OF WHICH ARE INCLUDED ON THE DISK. BASIC CAN BE SWITCHED INTO AT ANY TIME, BUT PASCAL MUST THEN BE RELOADED.

THE EDITOR IS MUCH LIKE BASIC'S AND REQUIRES LINE NUMBERS. SEVERAL ADVANCED EDITING COMMANDS HAVE BEEN ADDED TO AUTO NUMBER AND RENUMBER LINES, SEARCH AND REPLACE TEXT, ETC. AN ODD BUT USEFUL FEATURE IS THE INCLUSION OF SEVERAL BASIC DIRECT MODE KEYWORDS (RUN, CMD, PRINT, LIST, ETC.), WHICH MAKES IT EASY ON THOSE WHO ARE USED TO EDITING PROGRAMS FROM BASIC. DISK DIRECTORIES MUST BE LOADED AND LISTED TO BE LOOKED AT, WHICH WILL WIPE OUT ANY PROGRAM IN MEMORY (JUST LIKE BASIC!)

THE COMPILER IS SUPPLIED IN TWO VERSIONS. AS IT IS LOADED FROM DISK, THE RESIDENT COMPILER CO-RESIDES WITH THE EDITOR. THIS ALLOWS TRULY INTERACTIVE PROGRAM DEVELOPMENT. A PROGRAM CAN BE EDITED, THE RUN COMMAND GIVEN, AND AFTER A SHORT COMPILATION PERIOD (WHICH REPORTS ANY ERRORS IN THE CODE, ALSO), THE PROGRAM RUNS. IF IT DOESN'T DO QUITE WHAT YOU EXPECTED, YOU CAN TRY AGAIN WITHOUT HAVING TO RELOAD AN EDITOR AND SOURCE CODE FILE, WHICH IS THE PROCEDURE REQUIRED BY EVERY OTHER VERSION OF PASCAL I HAVE EVER SEEN ON ANY COMPUTER SYSTEM. THIS MEANS PROGRAM DEVELOPMENT IS MUCH FRIENDLIER, AND IT MAKES THIS AN EXCELLENT TUTORIAL SYSTEM, SINCE A STUDENT GETS INSTANT FEEDBACK ON WHETHER OR NOT HIS PROGRAM WORKS. HOWEVER, THE RESIDENT COMPILER DOES NOT SUPPORT THE FULL PASCAL LANGUAGE. PACK, UNPACK, DISPOSE, AND DISK FILES CANNOT BE USED BY THE RESIDENT COMPILER. THE OTHER, DISK-BASED COMPILER DOES FULLY SUPPORT ALL OF PASCAL, BUT OPERATES AS A TRADITIONAL NON-INTERACTIVE PASCAL SYSTEM. BESIDES THE FULL STANDARD PASCAL, OXFORD PASCAL INCLUDES AN ARRAY OF HI-RES GRAPHICS AND SOUND COMMANDS, AS WELL AS HEXADECIMAL NUMBERS AND MACHINE LANGUAGE LINKS. IT ALSO HAS THE ABILITY TO CHAIN TOGETHER PROGRAMS, VASTLY EXTENDING THE POWER OF THE LANGUAGE TO HANDLE COMPLEX TASKS. HOWEVER, IT DOES NOT INCLUDE ANY STRING EXTENSIONS. STRINGS MUST BE DEFINED AS PACKED ARRAYS OF CHARACTERS, AND MANIPULATED WITH USER-DEFINED FUNCTIONS. THIS EXCLUSION IS A SHAME, AS MOST RECENT VERSIONS OF THE LANGUAGE INCLUDE SOME DEGREE OF STRING HANDLING.

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MAKING YOUR OWN GAMES ON THE C64

by: Mark R. Brown, Assoc. Editor

COMPUTERS ARE MATHEMATICAL WHIZZES, PERFORMING THOUSANDS OF MULTIPLICATIONS PER SECOND. THEY CAN STORE FILE CABINETS FULL OF INFORMATION IN ARRAYS OF CHIPS NO BIGGER THAN THE HEADS OF PINS. THEY CAN LOAD, SORT, MANIPULATE, AND STORE MORE DATA IN A FEW MINUTES THAN A HUMAN CAN IN A YEAR. THEY CAN TRANSFER INFORMATION INSTANTANEOUSLY OVER THOUSANDS OF MILES. THEY HAVE REVOLUTIONIZED THE WAY WE WORK AND THE WAY WE THINK. BUT THE ONE THING THAT COMPUTERS DO BEST IS PLAY GAMES.

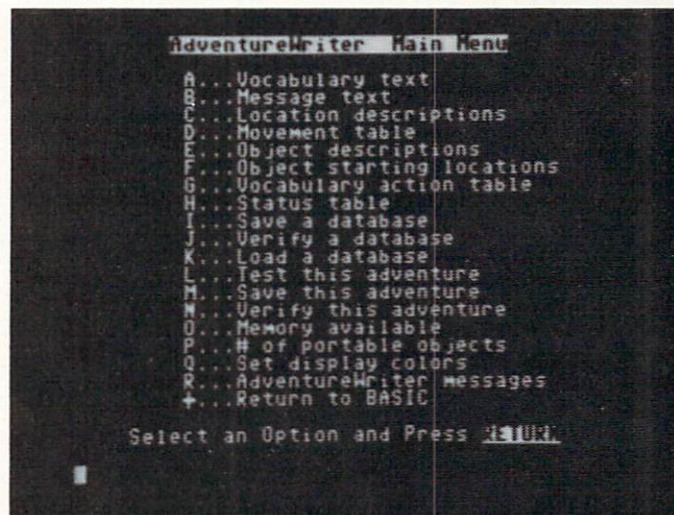
NO MATTER WHAT THE SIZE OR THE COST OF THE COMPUTER, FROM THE UNDER-\$80, 5K VIC-20 TO THE CRYOGENICALLY-COOLED, MULTI-MEGABUCK CRAY-ONE, THE ONE THING YOU CAN BANK ON IS THAT SOMETIME, SOMEONE IS GOING TO PLAY GAMES ON IT. AND OVER THE WHOLE WIDE SPECTRUM OF COMPUTERS NOW AVAILABLE, NONE LENDS ITSELF BETTER TO THIS NOBLE TASK THAN THE COMMODORE 64. WITH ITS SPRITES, SID-CHIP SOUND EFFECTS, AND HI-RES GRAPHICS, THE COMMODORE 64 IS CAPABLE OF ARCADE-QUALITY GAMES. IN FACT, MANY OF THE ARCADE TRANSLATIONS FOR THE COMMODORE 64 ARE THE BEST FOR ANY HOME COMPUTER SYSTEM. AND IF YOU HAVE ANY INTEREST IN GAMES AT ALL, AFTER PLAYING THE LATEST AND GREATEST NEW GAME YOU ARE LIKELY TO THINK HOW NICE IT WOULD BE IF YOU COULD ONLY WRITE GAMES LIKE THAT YOURSELF. AFTER ALL, YOUR IDEAS ARE JUST AS GOOD AS THE IDEAS IN THAT GAME YOU JUST FINISHED PLAYING! BUT HOW DO YOU GO ABOUT IT?

ONE OF THE BEST PLACES TO START IS BY MODIFYING EXISTING GAMES. ALL OF THE CLASSY GAMES YOU BUY ARE COPY-PROTECTED AND PROBABLY WRITTEN IN CRYPTIC ASSEMBLY LANGUAGE, MAKING THEM UNMODIFIABLE BY ANY BUT THE MOST EXPERIENCED PROGRAMMERS. THERE ARE, HOWEVER, A FEW GAMES AVAILABLE THAT LET YOU "GET YOUR FEET WET" IN GAME DESIGN, SUCH AS WIZARD FROM PROGRESSIVE PERIPHERALS & SOFTWARE. WIZARD IS A 50-SCREEN ROPES-AND-LADDERS TYPE GAME WITH A CONSTRUCTION-SET MODE THAT LETS YOU EASILY DESIGN AND SAVE YOUR OWN GAME SCREENS. IN A MORE TRADITIONAL VEIN IS PINBALL CONSTRUCTION SET FROM ELECTRONIC ARTS, WHICH GIVES YOU A BARE PINBALL TABLE AND MACINTOSH-LIKE ICONS TO MOVE AROUND AND BUILD YOUR OWN PINBALL MACHINES ON-SCREEN.

ANOTHER WAY TO EASE INTO GAMES PROGRAMMING IS TO START WITH ONE OF THE MANY GAMES AVAILABLE AS LISTINGS IN MAGAZINES, OR IN PUBLIC-DOMAIN (FREE) VERSIONS THAT CAN BE OBTAINED THROUGH USERS GROUPS OR TELEPHONE BULLETIN BOARD SYSTEMS. MOST OF THESE ARE WRITTEN IN BASIC, AND WITH SOME CAREFUL ANALYSIS EVEN A NOVICE PROGRAMMER CAN MODIFY A FEW LINES OF A PROGRAM AND COME UP WITH A GAME THAT IS SUBSTANTIALLY DIFFERENT THAN THE ONE HE STARTED OUT WITH. (CHANGE THE NUMBER OF ALIENS; MAKE THEM MOVE UP-AND-DOWN AS WELL AS SIDE-TO-SIDE; ADD A RANDOM "KILLER SAUCER"; ETC.) THIS IS ALSO ONE OF THE BEST WAYS THERE IS TO LEARN HOW TO WRITE PROGRAMS. BY STUDYING AND ANALYZING HOW SOMEBODY ELSE GOT THE COMPUTER TO DO SOMETHING INTERESTING AND USEFUL, YOU WILL LEARN THE BASICS OF BASIC PROGRAMMING.

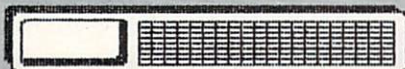
THERE IS ONE THING YOU WILL FIND OUT EARLY ABOUT GAMES WRITTEN IN BASIC, HOWEVER: THEY ARE SLOW. BY THE TIME YOU HAVE A COUPLE OF SPRITES MOVING AROUND THE SCREEN, MAKING A SOUND OR TWO WHILE KEEPING TRACK OF THE PLAYER'S JOYSTICK, YOU WILL RUN INTO SPEED PROBLEMS. SINCE BASIC IS AN INTERPRETED LANGUAGE, IT CANNOT SIMULTANEOUSLY HANDLE ALL THE THINGS THAT GO INTO A GOOD GAME.

ONE SOLUTION IS TO WRITE IN A DIFFERENT COMPUTER LANGUAGE; MOST ARE FASTER THAN BASIC. ASSEMBLY LANGUAGE IS THE LANGUAGE OF CHOICE FOR PROFESSIONAL GAME PROGRAMMERS BECAUSE IT IS THE COMPUTER'S "NATIVE TONGUE"; THE GAME WILL RUN AS FAST AS IT POSSIBLY CAN. FORTH IS ALSO A GOOD CHOICE FOR GAMES. MUCH FASTER THAN BASIC, THOUGH NOT AS FAST AS ASSEMBLY, FORTH IS FAST ENOUGH FOR MOST GAMES AND IS, IN FACT, USED BY SOME GAME PROGRAMMERS. THE FINAL VERSION OF A GAME PRODUCED BY EITHER OF THESE LANGUAGES CAN BE RUN ON ANY COMMODORE 64. ANOTHER POSSIBILITY IS TO USE A BASIC COMPILER. THIS TAKES YOUR FINISHED BASIC PROGRAM AND COMPILES IT INTO A FASTER, CODED VERSION. THE INCREASE IN SPEED CAN BE VERY IMPRESSIVE, BUT YOU WILL PROBABLY HAVE TO GO THROUGH SEVERAL "ADJUSTMENT SESSIONS" TO FIX TIME-SENSITIVE THINGS LIKE MUSIC. COMAL, ESPECIALLY THE NEW 2.00 CARTRIDGE VERSION, IS AN ESPECIALLY GOOD CHOICE FOR WRITING GAMES. IT IS AS EASY TO USE AS BASIC AND THE 2.00 VERSION ALLOWS FOR INTERRUPT-DRIVEN SPRITE ANIMATION AND SOUND, GIVING NEAR ASSEMBLY LANGUAGE SPEED IN A HIGH-LEVEL LANGUAGE PROGRAM. YOU MIGHT ALSO CHOOSE ONE OF THE BASIC EXTENSION PACKAGES, SUCH AS SIMON'S BASIC, WHICH ADD GRAPHICS AND SOUND COMMANDS TO BASIC. OF COURSE, THE COMAL AND BASIC EXTENSIONS SOLUTIONS WILL REQUIRE PERSONS PLAYING YOUR GAME TO HAVE THE SAME LANGUAGE OR EXTENSIONS AVAILABLE TO THEM, TOO.



BUT HOW DO YOU ACTUALLY TRANSLATE WHAT'S IN YOUR HEAD TO SOMETHING ON THE SCREEN? IF YOU ENVISION MULTI-COLORED SPRITE SPACESHIPS TUMBLING DOWN INTO BLACK HOLES, HOW CAN YOU CREATE THE SPRITES, HI-RES GRAPHICS STARFIELDS AND INTERSTELLAR SOUNDS YOU NEED TO MAKE YOUR GAME WORK? IN BASIC, THE MOST COMMON PROGRAMMING LANGUAGE, AND ASSEMBLY, THE FASTEST, THERE ARE NO DIRECT COMMANDS FOR PRODUCING SPRITES, GRAPHICS, OR SOUND. AND EVEN IN THE BEST OF ALTERNATIVE LANGUAGES THERE IS NO PROVISION FOR INTERACTIVELY DESIGNING THE ELEMENTS OF A GAME. FORTUNATELY, SOME GREAT TOOLS EXIST FOR DESIGNING GAMES, AND SOME DEVELOPMENT PROGRAMS PREVIOUSLY AVAILABLE ONLY TO PROFESSIONAL PROGRAMMERS HAVE RECENTLY BEEN MADE AVAILABLE TO THE GENERAL PROGRAMMING POPULACE.

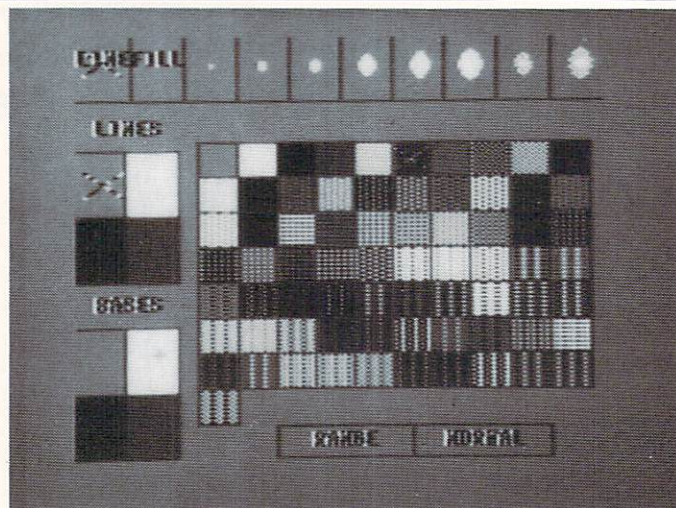
more...



MAKING YOUR OWN GAMES continued.....

THERE ARE DOZENS OF SPRITE EDITORS NOW AVAILABLE FOR THE COMMODORE 64. ONE OF THE BEST EXAMPLES IS SPRYTEBYTER FROM MICROTECHNIC SOLUTIONS. SPRYTEBYTER PROVIDES ALL THE USUAL AMENITIES, ALLOWING YOU TO DESIGN SPRITES IN A LARGE GRAPHIC GRID, DISPLAYING THE RESULTS AS YOU GO. IT ALSO GIVES YOU A CHOICE OF SINGLE OR MULTI-COLOR SPRITES, DRAWS AUTOMATIC HORIZONTAL, VERTICAL, OR DIAGONAL LINES, AND WILL COPY SPRITES USING VARYING DEGREES OF SYMMETRY. TWO ADDITIONAL FEATURES ARE THE ABILITY TO AUTOMATICALLY ROTATE SPRITES BY ANY ANGLE (WHILE COMPENSATING FOR THE DISTORTION CAUSED BY THE SCREEN'S RECTANGULAR PIXELS!), AND TO VIEW A SEQUENCE OF SPRITES IN A "MOVIE" MODE. THESE FEATURES MAKE SPRYTEBYTER AN EXCELLENT ANIMATED SPRITE DESIGN TOOL. SPRITES CAN BE SAVED AS A RELOCATABLE FILE THAT CAN BE USED BY THE ASSEMBLY LANGUAGE PROGRAMMER. ALSO INCLUDED IS AN EXTREMELY NICE UTILITY PROGRAM CALLED "THE GAME MAKER" THAT WILL LOAD YOUR SPRITES INTO MEMORY AND CREATE A BASIC PROGRAMMING ENVIRONMENT THAT ALLOWS YOU TO SAVE THE SPRITES DIRECTLY WITH YOUR BASIC PROGRAM AND TO USE THEM WITHOUT DATA STATEMENTS.

THE MAJOR PROBLEM ASSOCIATED WITH HI-RES GRAPHICS ON ANY COMPUTER IS THAT THEY TAKE UP SO MUCH MEMORY. JUST ONE HI-RES GRAPHICS SCREEN ON THE COMMODORE 64 USES 8K FOR DISPLAY, PLUS TWO 1K BLOCKS FOR COLOR MEMORY, PLUS A FEW BYTES OF VIC-II CHIP REGISTER DATA. THIS IS WHY A HI-RES SCREEN TAKES UP OVER 10K WHEN SAVED TO DISK, AND REQUIRES SUCH A LONG TIME TO LOAD. IT ALSO MEANS THAT A DISK CAN ONLY HOLD A MAXIMUM OF ABOUT 16 HI-RES PICTURES. THIS IS ENTIRELY TOO FEW FOR A MULTI-LEVEL GAME LIKE JUMPAN, OR FOR MULTIPLE GRAPHIC ILLUSTRATIONS FOR ADVENTURE GAMES. THERE ARE MANY PACKAGES THAT ALLOW YOU TO DESIGN IMPRESSIVE GRAPHICS SCREENS FOR THE COMMODORE 64, BUT ONE PACKAGE THAT HAS BEEN USED EXTENSIVELY BY PROFESSIONAL PROGRAMMERS TO OVERCOME THE MEMORY PROBLEM IS GRAPHICS MAGICIAN, FROM PENGUIN SOFTWARE. INSTEAD OF SAVING EVERY BYTE OF A GRAPHICS SCREEN, GRAPHICS MAGICIAN SAVES THE STEPS YOU USED TO DRAW THE SCREEN IN THE FIRST PLACE AND SIMPLY REDRAWS THE SCREEN WHEN YOU RELOAD THE FILE. OF COURSE, THIS REQUIRES THAT A RUN-TIME ROUTINE BE IN PLACE IN MEMORY ALONG WITH YOUR PROGRAM IN ORDER TO READ THE SAVED FILES AND EXECUTE THE REDRAW COMMANDS, BUT THE WHOLE GRAPHICS MAGICIAN PICDRAW ROUTINE TAKES UP ONLY ABOUT 5K OF BASIC PROGRAM MEMORY. IT USES THE RAM UNDER BASIC ROM FOR THE 8K HI-RES SCREEN SO YOU LOSE NO EXTRA MEMORY FOR DISPLAY SPACE. A SIMPLE PICTURE FILE CAN TAKE UP AS LITTLE AS ONE OR TWO BLOCKS ON A DISK, MAKING IT POSSIBLE TO STORE A COUPLE OF HUNDRED PICTURES PER DISK INSTEAD OF ONLY A FEW. ONE USEFUL SIDE EFFECT OF STORING PICTURES AS A SEQUENCE OF DRAWING STEPS IS THAT YOU CAN EASILY TRANSLATE THE PICTURES SO THAT THEY CAN BE DISPLAYED ON OTHER COMPUTERS WITH GRAPHICS MAGICIAN. SO IF YOU ARE DEVELOPING AN ILLUSTRATED ADVENTURE ON THE COMMODORE 64, RUNNING



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YOUR PICTURE FILES THROUGH THE INCLUDED INTERPRET PROGRAM WILL TRANSLATE THEM FOR THE ATARI OR APPLE, VASTLY REDUCING THE TIME REQUIRED TO ADAPT YOUR PROGRAM TO THESE MACHINES. THE ONLY DISADVANTAGE TO THIS PACKAGE IS THAT THE DRAWING COMMANDS ARE LIMITED TO SIMPLE POINT-TO-POINT LINE DRAWING, TEXTURE FILLS, AND BRUSH FILLS. THERE ARE NO FANCY ARC, BOX, OR TRANSFER FUNCTIONS. THERE IS A PROVISION FOR DRAWING OBJECTS OVER BACKGROUNDS, AND THE EDITING FEATURES ARE SUPERB. IT CAN TAKE EXTRA TIME AND CARE TO COME UP WITH JUST THE RIGHT GRAPHICS WITH THIS PACKAGE, BUT ONCE YOU HAVE THEM DRAWN THEY ARE DISK EFFICIENT, TRANSLATABLE, AND COMPATIBLE WITH BOTH BASIC AND ASSEMBLY LANGUAGE.

SOUND CONTRIBUTES A LOT TO THE FEEL AND PLAY OF A GOOD GAME. FORTUNATELY, THE 64'S SID CHIP IS A FULL-BLOWN MUSIC SYNTHESIZER, COMPARABLE TO MANY SMALL PROFESSIONAL COMBO INSTRUMENTS. UNFORTUNATELY, IT REQUIRES A REAL WORKING KNOWLEDGE OF SOUND SYNTHESIS AS WELL AS A LOT OF PEEKS AND POKES TO GET RECOGNIZABLE SOUND EFFECTS AND MUSIC OUT OF IT. A GOOD SOUND EDITOR IS NEEDED TO USE THE SID TO ITS MAXIMUM EFFECT. ALLEGRO (PREVIOUSLY CALLED PASS), SOON TO COME FROM ARTWORX, IS A SYSTEM THAT HAS BEEN USED TO PRODUCE THE SOUNDTRACKS FOR MANY COMMERCIAL PROGRAMS. THE FINAL OUTPUT FROM ALLEGRO IS AN INTERRUPT-DRIVEN PACKAGE THAT WILL SUPPLY BACKGROUND MUSIC AND CALLABLE SOUND EFFECTS THAT ARE COMPATIBLE WITH ASSEMBLY LANGUAGE AND BASIC. AND SINCE THE SOUNDS ARE INTERRUPT-DRIVEN, THE MUSIC EVEN CONTINUES PLAYING WHILE YOU STOP AND EDIT YOUR PROGRAM! THE CODE IS EXTREMELY COMPACT, ALLOWING MUCH MORE THAN AN ENTIRE RECORD ALBUM'S WORTH OF MUSIC TO BE STORED ON ONE DISK, AND AN IMPRESSIVE AMOUNT TO RESIDE IN MEMORY. THERE ARE MANY SPECIAL EFFECTS, INCLUDING PHASOR AND HEAVY METAL SOUNDS, AND THE ABILITY TO DEFINE REPEATING SEQUENCES, INSTRUMENT AND TEMPO CHANGES, DETUNING, AND MUCH MORE. RAYGUN SOUNDS, EXPLOSIONS, AND OTHER EFFECTS CAN SOUND WITHOUT INTERRUPTING BACKGROUND MUSIC. THE MANUAL IS THICK AND FRIENDLY, WITH HANDY REFERENCES, A TABLE OF CONTENTS, AND A MUSIC THEORY SECTION FOR US MUSICAL NOVICES. ALLEGRO IS DEFINITELY ONE OF THE BEST PROFESSIONAL GAME DESIGN TOOLS AVAILABLE.

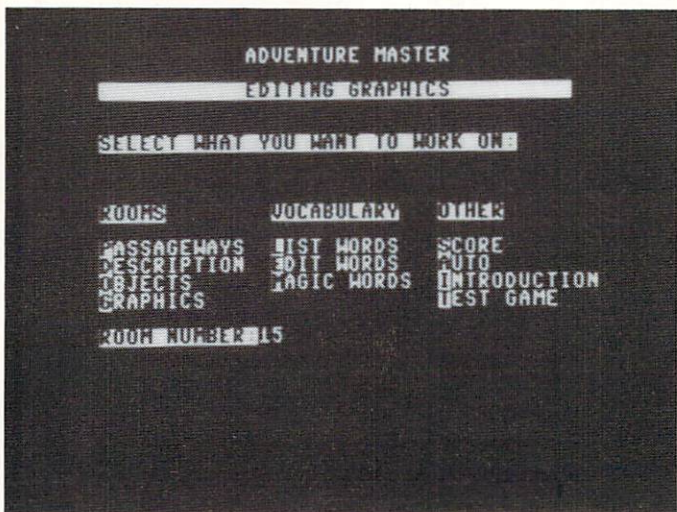


MAKING YOUR OWN GAMES continued.....

UNFORTUNATELY, ALLEGRO AND GRAPHICS MAGICIAN ARE INCOMPATIBLE WITH EACH OTHER, AS EACH SAVES ITS RUN-TIME PACKAGE IN THE SAME PLACE IN MEMORY. IF YOU CHOOSE TO USE ONE, YOU WILL HAVE TO FIND A DIFFERENT GRAPHICS OR SOUND PACKAGE TO USE FOR THE OTHER DESIGN FUNCTION. SPRITEBYTER SHOULD BE FULLY COMPATIBLE WITH EITHER OF THE OTHER TWO. THERE ARE MANY OTHER DEVELOPMENT PACKAGES ON THE MARKET. WE CHOSE THESE THREE AS REPRESENTATIVE OF SOME OF THE BEST PACKAGES CURRENTLY AVAILABLE.



Typical graphics display
from CBS's Adventure Master



Adventure Master's Main Menu

YOUR INTEREST MIGHT NOT LIE IN THE AREA OF ARCADE GAMES, BUT IN THE MORE ESOTERIC ARENA OF THE ADVENTURE GAME. WHAT THEN? AGAIN, THERE ARE MANY GOOD ADVENTURES IN BASIC IN THE PUBLIC DOMAIN, READY FOR YOU TO SCRUTINIZE AND MODIFY TO YOUR HEART'S CONTENT. THE WRITING OF AN ADVENTURE GAME FROM SCRATCH TAKES CAREFUL MAPPING AND PLANNING BEFORE YOU EVER SIT DOWN TO A COMPUTER, SINCE YOU ARE ESSENTIALLY WRITING THE ELECTRONIC EQUIVALENT OF A SHORT PLAY OR NOVEL. BUT ONCE YOU HAVE PLOTTED AN ADVENTURE ALL YOUR OWN, THERE ARE REALLY ONLY TWO WAYS TO GET IT INTO THE MACHINE: (1) WRITE ONE IN THE LANGUAGE OF YOUR CHOICE, POSSIBLY ADDING GRAPHICS OR SOUND USING A DEVELOPMENT PACKAGE LIKE THE ONES DESCRIBED ABOVE, OR (2) USE ONE OF THE RELATIVELY NEW ADVENTURE-CREATION PROGRAMS. HERE ARE THREE EXAMPLES:

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CBS SOFTWARE'S ADVENTURE MASTER TAKES A DIFFERENT APPROACH, LETTING YOU DEVELOP ADVENTURES WITH SOME HI-RES GRAPHICS ILLUSTRATIONS. YOU ARE LIMITED TO 10 PICTURES OR SO PER ADVENTURE BECAUSE OF THE MEMORY INTENSIVENESS OF THE HI-RES GRAPHICS, AS MENTIONED ABOVE. ADVENTURE MASTER ADVENTURES ARE DISK-ORIENTED, SAVING ALL THE INFORMATION TO DISK AT THE TIME OF WRITING AND PULLING IT OFF AS NEEDED WHEN YOU PLAY LATER. FILES ARE PASSWORD PROTECTED SO ONLY THE AUTHOR CAN MODIFY HIS ADVENTURE. YOU CAN MAKE AN AUTO-RUN, DISTRIBUTABLE COPY OF YOUR CBS ADVENTURES. THREE ADVENTURES ARE INCLUDED, AND THE PACKAGE AUTHOR'S OWN SAMPLE ADVENTURE IS AN INTERESTING ONE. THE GOAL IS TO FIND THE CLUES THAT WILL GIVE YOU THE PASSWORD TO ALLOW YOU TO EXAMINE AND MODIFY THE ADVENTURE!

AS YOU CAN SEE, THERE ARE MANY EXCELLENT TOOLS AVAILABLE FOR THOSE OF US INTERESTED IN WRITING OUR OWN ARCADE OR ADVENTURE GAMES, NO MATTER IF WE WANT TO DO SO ONLY FOR OUR OWN SATISFACTION AND ENJOYMENT, OR IF OUR AMBITIONS ARE GREATER AND INVOLVE COMMERCIAL GAIN. IF YOU WRITE GAMES STRICTLY FOR YOUR OWN ENJOYMENT, I STRONGLY URGE YOU TO MAKE THEM AVAILABLE TO YOUR LOCAL USERS GROUP AND TO SUBMIT THEM TO A SOURCE OF PUBLIC ACCESS SUCH AS PUBLIC DOMAIN, INC. OTHERS WOULD BE VERY INTERESTED IN SEEING AND PLAYING YOUR GAMES, AND CAREERS HAVE BEEN LAUNCHED THROUGH THE RECOGNITION THAT HAS COME TO THE AUTHORS OF SOME OUTSTANDING PUBLIC DOMAIN SOFTWARE.



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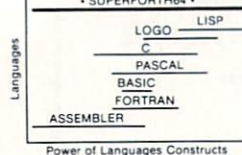
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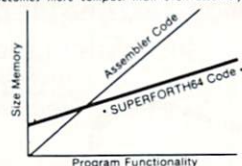
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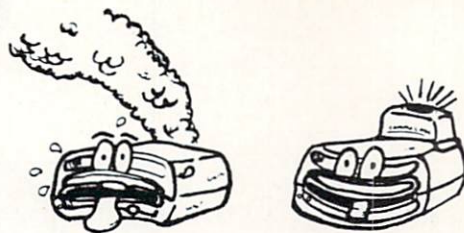
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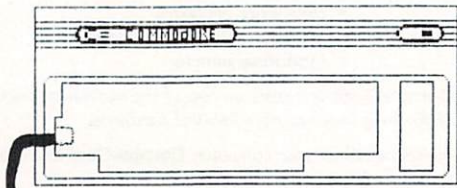


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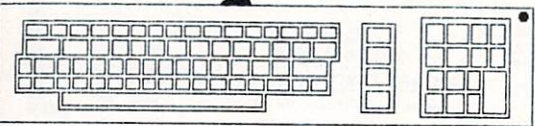
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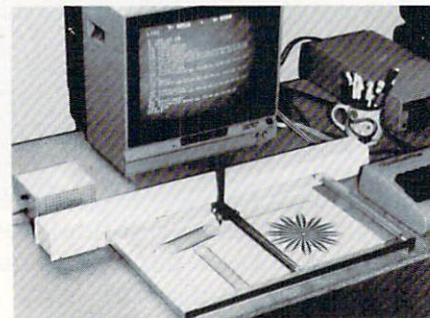
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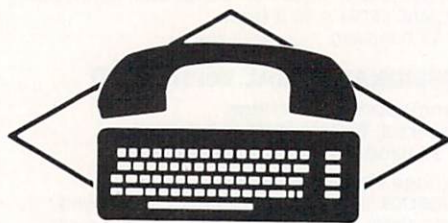
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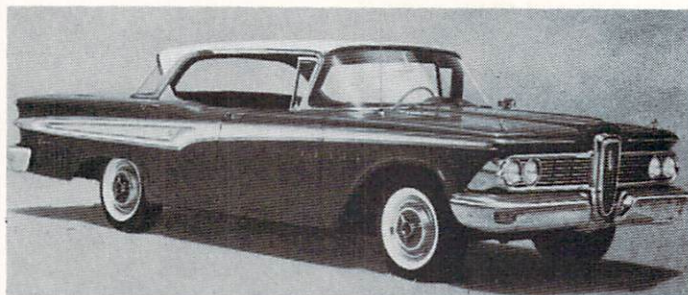
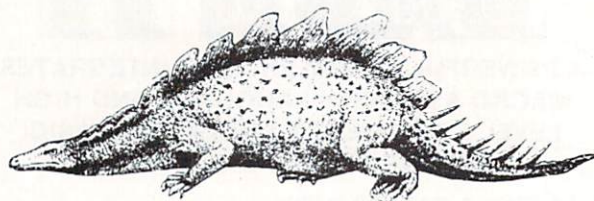
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E.D.

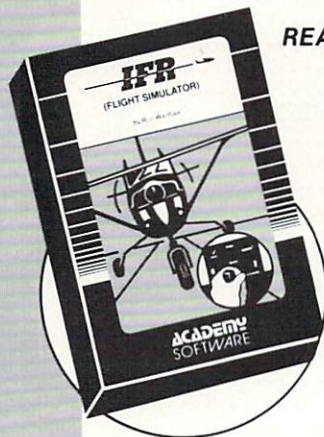
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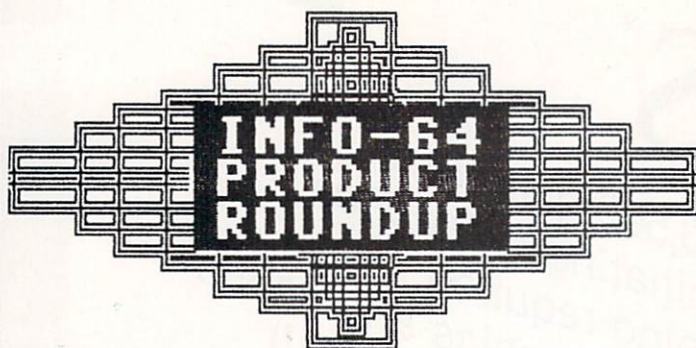
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HOW TO USE THE PRODUCT ROUNDUP

BELOW IS AN EXPLANATION OF THE PRODUCT LISTING FORMAT.

PRODUCT NAME

ID#.....(D).....	39.95.....	****
UNIQUE THREE LETTER CODE KEYED TO THE VENDOR INDEX NEAR THE BACK OF THIS ISSUE.	MEDIA ON WHICH PROGRAM IS AVAILABLE: D=DISK R=ROM OR CARTRIDGE T=TAPE R/D=EITHER MEDIUM R&D=BOTH REQUIRED	SUGGESTED RETAIL PRICE. "NA" IN THIS FIELD MEANS INFO-64 HAS NOT TESTED THE PRODUCT. INFORMATION SHOWN HAS BEEN PROVIDED BY THE VENDOR.

ONLY PRODUCTS WHICH INFO-64 HAS USED ARE RATED. THE COMMENTS ACCOMPANYING A RATED PRODUCT ARE BASED ON OUR FIRST-HAND EXPERIENCE WITH THE PRODUCT. THE ABSENCE OF A RATING THEREFORE INDICATES THAT THE COMMENTS ARE BASED ON INFORMATION PROVIDED BY THE MANUFACTURER OR THEIR MARKETING STAFF, AND THAT WE HAVE NOT SUBSTANTIATED THEIR CLAIMS. THESE LISTINGS ARE PROVIDED AS A SERVICE TO YOU, THE READER, IN AN EFFORT TO GIVE YOU A COMPREHENSIVE LISTING OF PRODUCTS IN ONE PLACE TO AID IN SELECTING THE ONE WHICH IS BEST FOR YOUR NEEDS.

* RATING KEY:

- **.....POOR. DOES NOT LIVE UP TO EXPECTATIONS.
LACKING IN FEATURES, IMAGINATION.
- ***.....AVERAGE. PERFORMS REASONABLY WELL, BUT
LACKS THE ORIGINALITY, DEPTH, AND/OR
USABILITY OF SUPERIOR PRODUCTS.
- ****....VERY GOOD! PROFESSIONAL, SOLID, CREATIVE.
STANDS APART.
- *****..OUTSTANDING!! STATE-OF-THE-ART FEATURES, A
LEADER IN ITS SUBJECT.

+ AND - SIGNS INDICATE SLIGHTLY HIGHER AND LOWER
JUDGEMENTS, RESPECTIVELY.

BEGINNING WITH THIS ISSUE OF INFO-64, THE PRODUCT ROUNDUP INCLUDES NEW LISTINGS ONLY. ISSUE #4 CONTAINS THE MOST RECENT, MORE EXTENSIVE LISTING OF PRODUCTS. THE COMPREHENSIVE PRODUCT ROUNDUP WILL BE PUBLISHED ANNUALLY OR SEMI-ANNUALLY FROM NOW ON. WE PLAN TO INCORPORATE A "READER SERVICE" SYSTEM TO BE USED WITH THE COMPLETE PRODUCT ROUNDUP. YOUR COMMENTS ON THIS NEW SYSTEM ARE WELCOME.

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WANT TO BUY ANY OF THESE.**

BUSINESS ACCOUNTING



THE FOLLOWING PROGRAMS FROM BUSINESS ELECTRONICS SOFTWARE AND TECHNOLOGY EACH PROMISE AUTOMATED DISK FORMATTING, AUTOMATED FILE CREATION, SCREEN GUIDED DATA ENTRY, LOOSE LEAF MANUAL, ON SCREEN MENUS, AND FUNCTION KEY COMMANDS.

INVENTORY MANAGEMENT SYSTEM

BST.....(D).....69.95.....NA
UP TO 1500 LINE ITEMS WITH AS MANY AS 999 UNITS PER LINE. RECALL AND DISPLAY OF ANY ITEM IN LESS THAN 2 SECONDS. EDITING OF ALL INVENTORY, SUPPLIER, AND CUSTOMER DATA. PRINTING OF ALL DATA DISPLAYED ON SCREEN. AUTOMATIC FILE CREATION AND "LOST" FILE RECOVERY. 5 PREFORMATTED REPORTS. USER DEFINED PERIOD-TO-DATE REPORTS. ERROR AND CAUTION MESSAGES IN RED. INTEGRATED DEVELOPING AND PRINTING OF AS MANY AS 50 INVOICES AND 50 PURCHASE ORDERS. USER DEFINED REPORTS ON ANY COMBINATION OF 28 INVENTORY PERFORMANCE FACTORS WITH 3 SORT FIELDS.

ACCOUNTS PAYABLE MANAGEMENT SYSTEM

BST.....(D).....59.95.....NA
INCLUDES AUTOMATED CHECK WRITING. READY-TO-RUN REPORTS: ACCOUNT AGING, PAYMENT SCHEDULE, CREDIT LIMITS. ACCOUNT SUMMARIES, AND VENDOR LISTS.

ACCOUNTS RECEIVABLE MANAGEMENT SYSTEM

BST.....(D).....59.95.....NA
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GENERAL LEDGER

BST.....(D).....59.95.....NA
CAN BE USED AS AN INTEGRATED SYSTEM WITH PAYABLES AND RECEIVABLES PROGRAMS ABOVE OR STAND ALONE.

INTEGRATED BUSINESS/HOME



HOMEPAK

BAT.....(R).....49.95.....NA
WORD PROCESSING, INFORMATION MANAGEMENT, AND TELECOMMUNICATIONS ON A SINGLE DISK. PROGRAMS WORK WITH EACH OTHER.

CHECKBOOK MANAGEMENT



MICROCHECK

MPP.....(R).....49.95.....NA
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LOANS & INVESTMENT



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DMX.....(D).....29.95.....NA
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MISC. BUSINESS & PERSONAL



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SPELLING CHECKERS



SPELL NOW

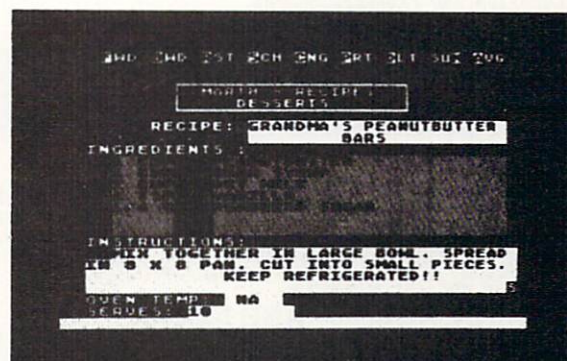
CAR.....(D).....39.95.....NA
COMPATIBLE WITH "WRITE NOW". HAS 34,000 WORD DICTIONARY. AND USER DEFINABLE DICTIONARIES. MARKS QUESTIONED WORDS IN TEXT. VIEW WORD IN CONTEXT AND/OR CORRECT IT. MENU DRIVEN.

GENERAL LIST & FILE MNGMNT.



MICROFILER

MPP.....(R).....49.95.....NA
RECIPES, MAILING LISTS: ADD/SUBTRACT, SORT, ALPHABETIZE, SEARCH, AND OUTPUT TO PRINTER.



ADVANCED EDUCATIONAL SOFTWARE

Q-STAT

QIN.....(D).....269.95.....NA
MENU DRIVEN STATISTICS PACKAGE. COVERS DATA TRANSFORMATION, DESCRIPTIVE STATS, CROSS-TABULATION, T-TESTS, NON-PARAMETRIC STATS, AND CORRELATION ANALYSIS INCLUDING SCATTERGRAMS, RESIDUAL ANALYSIS, ANOVA AND TIME-SERIES ANALYSIS. (LISTING HAS CORRECTED VENDOR CODE.)

TYPING & KEYBOARD MASTERY

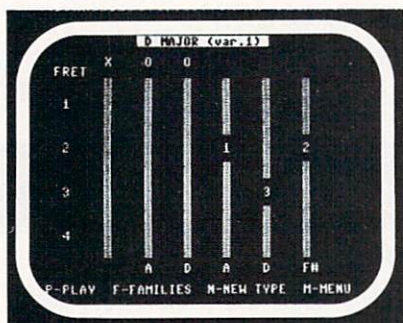
WIZTYPE

SIE.....(D/R).....34.95/39.95.....NA
WIZARD OF ID COMICS CHARACTERS CHALLENGE YOU TO TYPE FASTER IN A GAME ATMOSPHERE. SET THE PROFICIENCY LEVEL UP TO 120 WPM.

GENERAL EDUCATIONAL SOFTWARE

GUITAR MASTER

MAS.....(D).....NA.....***
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SNT.....(D).....NA.....NA
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COL.....(D).....34.95.....NA
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SHA.....(D).....29.95.....NA
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FAY: THE WORD HUNTER

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EDUCATIONAL INTERACTIVE FICTION ADVENTURES WITH GRAPHICS. CHILD'S INPUT CHANGES THE OUTCOME OF THE STORY. TWO STORIES PER PACKAGE.

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ARCADE & ACTION GAMES

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ELE.....(D).....40.00.....***-
DELUXE EDITION OF ZOMBIES. HAS SIMULTANEOUS TWO PLAYER ACTION. 13 DUNGEONS/129 ROOMS. FRANTIC ACTION WITH POOR CHARACTER/BACKGROUND RELATIONSHIP.

BLAGGER

NET.....(D).....NA.....***-
DEVELOPED IN ENGLAND, THIS JUMPMAN STYLE GAME STARS A BURGLAR TYPE WHO MUST DEAL WITH MOVING FLOORS, POISONOUS BUSHES, HOLES IN THE FLOOR, MOVING FLOORS, AND WATCH-ROBOTS AMONG OTHER THINGS WHILE COLLECTING KEYS AND OTHER NECESSITIES OF THE TRADE. 30 DIFFERENT ROOMS. 5 SKILL LEVELS.

ARCADE & ACTION GAMES CONT'D ↓

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NET.....(D).....NA.....***+
PLEASANT, UNCOMPLICATED GAME FROM ENGLAND INVOLVES FLYING A SAUCER AROUND A CAVE SHOOTING GREEN LIGHT BULBS, GHOSTS, FISH, AND SO ON.

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NET.....(D).....NA.....***
SPACE AMBUSH TYPE GAME WITH ENEMIES SCROLLING FROM TOP TO BOTTOM.

KARATEKA

BRO.....(D).....34.95.....NA
ACTION GAME DESIGNED TO MAKE YOU FEEL LIKE YOU'RE IN A MOVIE. STORY LINE, CHARACTERS, AND REALISTIC SOUND AND ANIMATION ARE USED TO INVOLVE THE PLAYER. KARATE HERO'S MOVEMENTS ARE CONTROLLED BY THE JOYSTICK AS HE BATTLES A SUCCESSION OF WARRIORS IN ORDER TO SAVE THE PRINCESS FROM THE EVIL WARLORD.

CASTLES OF DR. CREEP

BRO.....(D).....29.95.....NA
COOPERATIVE, TWO-PLAYER INTERACTION AIDS IN ESCAPING FROM THIRTEEN 200-ROOM CASTLES COMPLETE WITH MUMMIES AND OTHER THREATS. RECREATES THE ATMOSPHERE OF AN OLD "B" MOVIE.

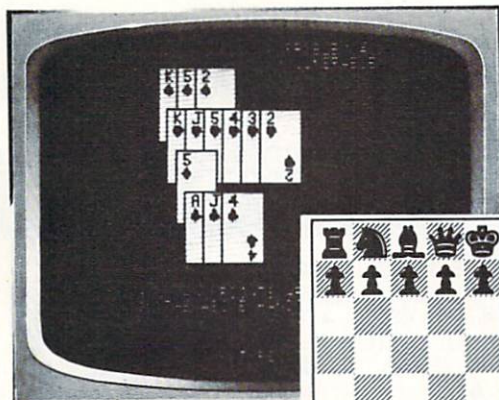
CONVENTIONAL GAMES ↓

COMPUBRIDGE

ART.....(D).....24.95.....NA
BASED ON SHIRLEY SILVERMAN'S FIVE CARD MAJOR BRIDGE TEACHER'S MANUAL, THIS DISK AND MANUAL PACKAGE STARTS WITH THE BASICS. UNLIMITED PRACTICE HANDS GENERATED RANDOMLY WITH ALTERNATIVE STRATEGIES SUGGESTED FOR WEAK MOVES. TEXT INCLUDED.

BEST OF CHESS VOL 1: AMERICAN TRIUMPH

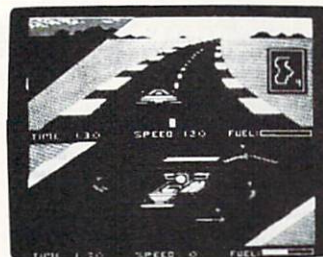
MAR.....(D).....34.95.....***
64 OF BOBBY FISCHER'S CHESS MATCHES ON THE ROAD TO THE WORLD CHAMPIONSHIP ARE RECORDED HERE. YOU CAN USE THEM IN THREE MODES: 1) EARN POINTS BY GUESSING IN ADVANCE THE MOVES TO BE MADE; 2) STEP THROUGH THE MOVES FORWARD OR BACKWARD TO STUDY THE STRATEGIES OF FISCHER AND HIS OPPONENT; AND, 3) VIEW THE GAME AT ONE OF NINE SPEEDS (CHANGE SPEED ANY TIME). A FOURTH MODE IS FOR TWO PLAYER ELECTRONIC CHESS WITH OPTIONAL TIMERS. GAMES MAY BE SAVED TO DISK FOR GAMES BY MAIL, FOR FINISHING LATER, OR TO BE VIEWED IN ONE OF THE 3 MODES DESCRIBED ABOVE.



STRATEGY & SIMULATION GAMES ↓

PITSTOP II

EPY.....(D).....40.00.....NA
SEQUEL TO PITSTOP, PITSTOP II HAS TWO PLAYER/SPLIT SCREEN ACTION ON THE TRACK AND STRATEGY IN THE PITS. FAMOUS RACE TRACKS OF THE WORLD ARE REPRESENTED TO ADD REALISM.



GRAPHIC ADVENTURE GAMES ↓

ARCHON II: ADEPT

ELE.....(D).....40.00.....***-
PLAYED ON A "BOARD" WHERE ICONS OCCUPY SQUARES, AND IN AN ARENA WHERE ICONS RACE AROUND TRYING TO ZAP EACH OTHER, THE OBJECT OF ARCHON II IS TO OCCUPY ALL SIX POWER POINTS (THEY MOVE AROUND ADDING DIFFICULTY). ONE PLAYS THE COMPUTER OR TWO PLAY EACH OTHER.

TEXT ADVENTURE GAMES ↓

SUSPECT

INF.....(D).....39.95.....NA
THIS TIME YOU ARE THE SUSPECT, AND SGT. DUFFY WANTS YOU! YOU MUST SOLVE THE MURDER TO CLEAR YOURSELF, AND DO IT AMIDST THE ACTIVITY OF A MASKED BALL IN A MANSION. TEXT BASED "INTERACTIVE NOVEL".

ADVENTURE GAME TUTORIALS

PHE.....(D).....9.99EACH.....NA
TUTORIALS FOR THREE SEPARATE GROUPS OF GAMES HELP YOU GET THROUGH "NO EXIT" SITUATIONS. DISK 1 TUTOR IN 10 INFOCOM GAMES. DISK 2 HELPS WITH THE ULTIMA SERIES II-IV, AND TWO OTHERS. DISK 3 INCLUDES THE INSTITUTE, MASK OF THE SUN, AND EIGHT OTHERS.

GAMES COLLECTIONS ↓

64 COLLECTIONS (NOW THERE ARE 13)

PUB.....(D).....10.00EACH.....***+
COLLECTIONS #1 THROUGH #12 PLUS ONE FOR HAM RADIO HOBBYISTS. 25 OR MORE PROGRAMS PER DISK.

OTHER RECREATIONAL SOFTWARE ↓

TRIVIA PLUS

ACA.....(D).....24.95.....NA
OVER 3,500 QUESTIONS FROM 8 CATEGORIES. 100 ACCOMPANYING TUNES AND GRAPHICS TO LIVEN UP THE GAME. UP TO 6 PLAYERS.

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MUSICAL CHRISTMAS DISC

ORE.....(D).....24.95.....NA
TEN CHRISTMAS CAROLS EACH WITH A FULL COLOR GRAPHIC
SCENE. CAN BE COPIED, PERSONALIZED, AND SENT AS HOLIDAY
GREETINGS. A PACKAGE OF 10 DISKS AND MAILERS ADDS
\$29.95.

CHRISTMAS CAROLS

JOH.....(D).....16.95.....NA
18 OF THE MOST POPULAR CAROLS WITH GRAPHICS AND LYRICS
SHOWN ON SCREEN FOR SINGING ALONG.



A CHRISTMAS ADVENTURE

BIT.....(D).....16.95.....NA
FIND SANTA CLAUS IN HIS ICE CASTLE IN THIS MAINLY TEXT,
CONVERTED-FROM-APPLE HOLIDAY ADVENTURE WITH SOME HUMOR.
CUSTOMIZE THE PROGRAM FOR A GIFT WITH RECIPIENT'S NAME
AND OTHER PERSONAL INFORMATION POPPING UP IN THE MIDDLE
OF THE GAME.

BACKUP & COPY SOFTWARE

INFO-64 DOES NOT CONDONE
UNAUTHORIZED COPYING OF SOFTWARE
WHETHER FOR PROFIT OR FUN.
WE DO, HOWEVER, SUPPORT
THE SOFTWARE PURCHASER'S RIGHT
TO HAVE PERSONAL BACKUPS
OF VALUABLE SOFTWARE. AND TO THAT END
LIST THE FOLLOWING COMMERCIAL PROGRAMS
WHICH PROVIDE THIS CAPABILITY TO VARYING DEGREES.

DISKMAKER

BSX.....(D).....49.95.....NA
FULLY AUTOMATIC, COPIES HALF-TRACKS, HIDDEN ID'S, DOS
MISMATCH.

DI-SECTOR VERSION 2.0

SPT.....(D).....39.95.....NA
FULLY AUTOMATIC. VIEW AND ALTER SECTOR HEADERS, REMOVE
ERRORS FROM TRACKS/SECTORS, WRITE PROGRAMS INSIDE YOUR
1541.

SOFTWARE PROTECTION HANDBOOK

PSI.....(D).....29.95.....NA
212 PAGE REFERENCE MANUAL ON PROTECTION TECHNIQUES FOR
TAPES, DISKS, AND CARTRIDGES. COMES WITH PROGRAM DISK.

DISC

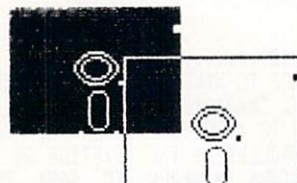
RAD.....NA.....69.95.....NA
BACKUP AND COPY PROGRAM CLAIMS TO BE FASTEST,
EASIEST-TO-USE WITH AUTOBOOT ON POWER UP, SYSTEM RESET
BUTTON, FILE MANAGER, AND DISK EDITOR WITH SCREEN DUMP.

COPYQ

RAD.....(D).....39.95.....NA
CLAIMS SIMILAR TO DISQ'S WITHOUT RESET AND AUTOBOOT.
REVERGINS DISKS RATHER THAN ERASING AND REMOVES DATA
ERRORS.

NEW REVISED CLONE MACHINE

MWD.....(D).....49.95.....NA
NOW BACKS UP NON-STANDARD SECTORS. REPRODUCES
DENSITY-FREQUENCY ALTERATIONS, SYNC'S TO PARTICULAR
REFERENCE SECTORS, AND REFORMATS SINGLE TRACKS.



PROGRAMMING ENVIRONMENT

DECODE-64

FRE.....(D).....29.95.....NA
DECODES MACHINE LANGUAGE INTO ASSEMBLY LANGUAGE FROM
RAM, ROM, OR DISK. WORKS ALONE OR WITH DEVELOP-64.

64 ROMS

FRE.....(D).....24.95.....NA
COMPLETE LISTING OF THE ROMS IN THE 64. COMMENTS,
LABELS, AND CROSS REFERENCES. HELPS IN MODIFYING THE
SYSTEM BY COPYING IT TO RAM AND DISCONNECTING THE ROM.

PROGRAMMING LANGUAGES

PROMAL

SYS.....(D).....54.95.....NA
A STRUCTURED PROCEDURAL LANGUAGE WITH INDENTATION AND NO
LINE NUMBERS REQUIRED. PROMAL FEATURES A ONE-PASS
COMPILER, SPEEDY EXECUTION, AND EDITING ADVANTAGES LIKE
INSERT, DELETE, AND SEARCH BY LINE, COPY, MOVE, AND
DELETE BY BLOCK, AUTO INDENT, AND STRING SEARCH AND
REPLACE.

KYAN PASCAL

KYA.....(D).....49.95.....NA
FULL FEATURED PASCAL WITH COMPILER, ERROR MESSAGES FOR
DEBUGGING, FULL SCREEN EDITOR, SUPPORT FOR FILES,
POINTERS, ETC. TUTORIAL MANUAL INCLUDED.

WATCOM PASCAL

WAT.....(R&D).....149.00.....NA
FULL ANSI STANDARD PASCAL WITH FULL SCREEN EDITOR,
INTERACTIVE DEBUGGER, GRAPHICS LIBRARY, AND "PEEK" AND
"POKE" FUNCTIONS. MANUAL INCLUDED.

EXTENSIONS TO 'BASIC'

WATERLOO STRUCTURED BASIC

WAT.....(R).....99.00.....NA
AUGMENTS STANDARD BASIC WITH STRUCTURED PROGRAMMING
STATEMENTS, "CALL" INSTEAD OF "GOSUB", AND ADDITIONAL
COMMANDS: AUTO, DELETE, AND RENUMBER. MANUAL INCLUDED.

SM KIT 64

S-M.....(D).....59.00.....NA
BASIC LANGUAGE PROGRAMMING TOOL FOR THE 64 HELPS CREATE,
EDIT, AND REARRANGE PROGRAMS WITH SIMPLE COMMANDS.
TRACE FACILITY FOR DEBUGGING.

MISCELLANEOUS UTILITIES



AUTO64 DIRECTORY

GES.....(D).....29.95.....NA
A DOS WEDGE ACTIVATED BY THE RESTORE KEY. HAS 14 MOSTLY ONE LETTER COMMANDS FOR COMMON DISK COMMANDS AND SOME CONVENIENCES.

VIDEO TUNE-UP

SLP.....(D).....39.95.....NA
VIDEO ANALYZER PROGRAM FOR TESTING, SERVICING, OR ADJUSTING MONITOR OR TV. GENERATES TEST PATTERNS, AN ANIMATED PERFORMANCE TEST, AND IS MENU DRIVEN.

KERNAL ROM MODIFICATIONS

ALM.....(R).....49.94.....NA
CUSTOM POWER ON MESSAGE, SCREEN COLORS, AND DEFAULTS TO DISK DRIVE (INSTEAD OF CASSETTE). BUILT IN DOS WEDGE (INCLUDING UN-NEW), 1200 BAUD COMPATIBILITY, AND WARM RESTART. WIRE IT IN OR HAVE IT INSTALLED FOR \$20 PLUS SHIPPING.

1541 FLASH

SEW.....(R).....89.95.....NA
PERMANENT INSTALLATION ROM GIVES TRIPLE LOAD/SAVE SPEED AND 21 EXTRA COMMANDS (DOS WEDGE TYPE AND SOME FOR EDITING AND PROGRAMMING). MANUAL SHOWS HOW TO WRITE SOFTWARE USING SPEEDY DATA TRANSFER.

FAST LOAD CARTRIDGE

EPY.....(R).....50.00.....NA
PLUGS INTO CARTRIDGE PORT AND SPEEDS UP LOADING AND COPYING.

KWIK-LOAD

DMO.....(D).....19.95.....NA
LOAD/SAVE AT TRIPLE SPEED. MENU DRIVEN. DISK BASED UTILITY WITH DISK EDITING: RENAME, DELETE, UNDELETE, VALIDATE, FORMAT, EDIT TRACKS AND SECTORS, AND PRINT OUT SECTORS.



TELECOMPUTING



Q-TERM

RAD.....(D).....49.95.....NA
UP AND DOWN LOAD, SEND, RECEIVE, PRINT BUFFERS, AND SUPPORT VICMODEM, HAYES, WESTRIDGE, MITEY-MO AND OTHER MODEMS.

BULLETIN BOARD SOFTWARE

RISHER CRBBS

CRI.....(D).....69.99.....NA
REQUIRES ONE 1541, AND ONE 1650 AUTO-MODEM. TWO MESSAGE BASES, CHAT, FEEDBACK, POST OFFICE, USAGE LOG, VOTING BOOTH, 10 LEVELS OF VALIDATION.

EXPANSION BOARDS



PROTO-64

BOR.....12.95/15.95.....NA
PROTOTYPING BOARD PLUGS INTO EXPANSION PORT. 44 CONTACT GOLD-PLATED EDGE CONNECTOR. TWO SIZES: 4.5"x4" AND 6.5"x4.5".

MISCELLANEOUS INTERFACES

VIC/C64 VOLKSMODEM INTERFACE CABLE

OMX.....22.95.....NA
VOLKSMODEM NOT INCLUDED. INCLUDED IS A TYPE-IN BASIC TERMINAL PROGRAM AND A MANUAL. TINY CIRCUIT BOARD IN CONNECTOR SHELL TRANSLATES I/O.

PRINTER INTERFACES



PARALLEL PRINTER INTERFACE WITH COMPLETE PARALLEL PRINTER DRIVER

OMX.....(D+INT).....39.95.....NA
FOR PARALLEL PRINTERS WITH BIT MAP GRAPHICS CAPABILITIES, THE DRIVER ENABLES PRINTING OF U/L CASE AND UP CASE/GRAPHICS CHARACTERS IN EACH OF TWO MODES: 1) ACTUAL GRAPHICS CHARACTERS, OR, 2) MNEMONICS AND CHR\$ REPRESENTATIONS (EG. <BLK>, <198>). KEYBOARD OR PROGRAM SELECTED. ASCII/CBM ASCII CONVERSION. CONFIGURATIONS FOR POPULAR PRINTERS AND CONFIGURATION PROGRAM FOR OTHERS.

DELUXE RS232 INTERFACE

OMX.....39.95.....NA
PLUGS INTO USER I/O PORT. HAS 3 SWITCHES TO SET DTE/DCE, INVERT PINS 5 AND 20, AND SELECT BUSY LINE POLARITY. SUPPORTS ALL RS232 SIGNALS. 3' CABLE, CHOICE OF MALE, FEMALE, OR PC BOARD FEMALE DB25 CONNECTORS. UP TO 2400 BAUD. INCLUDES TUTORIAL AND TYPE-IN BASIC TERMINAL PROGRAM.

COMPLETE SERIAL PRINTER DRIVER

OMX.....(D).....39.95.....NA
FOR SERIAL RS232 PRINTERS WITH BIT MAP GRAPHICS CAPABILITIES, THE DRIVER ENABLES PRINTING OF U/L CASE AND UP CASE/GRAPHICS CHARACTERS IN EACH OF TWO MODES: 1) ACTUAL GRAPHICS CHARACTERS, OR, 2) MNEMONICS AND CHR\$ REPRESENTATIONS (EG. <BLK>, <198>). KEYBOARD OR PROGRAM SELECTED. ASCII/CBM ASCII CONVERSION.

U.PRINT MODEL C

DDC.....89.95.....NA
PRINTER INTERFACE WITH COMMODORE EMULATION.

PRINTER BUFFERS



PRINTER BUFFER MODEL 16K

DDC.....119.95.....NA
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MICRO STUFFER

MPP.....149.95.....NA
64K PRINTER BUFFER WITH REPEAT AND CLEAR BUTTONS.

GPC (GRAPHIC PRINTER CABLE)

RAD.....89.95.....NA
2K BUFFER, 100% C-64 COMPATIBLE, SUPPORTS MOST POPULAR PRINTERS, AND HI-RES MACHINE LANGUAGE SCREEN DUMP.

SPRINT PRINT

RAD.....39.95.....NA
PRINTER BUFFER GIVES 1525 AND 801 PRINTERS DESCENDERS AND UNDERLINING.

MODEMS ETC.

AUTO DIAL/AUTO ANSWER MODEM

SOM.....91.00.....NA
VOICE/DATA SWITCH, 300 BAUD, BELL 103/113 COMPATIBLE. SOFTWARE INCLUDED GIVES SMOOTH SCROLLING, SET-UP MENU, 24K BUFFER, AND PROGRAMMABLE CONFIGURATIONS.



MASS STORAGE



RAMDISC-64

LAI.....(R).....370.00.....NA
DISKLESS DISK DRIVE: PLUG IN EXPANSION CARTRIDGE COMES WITH 64K EXPANDABLE TO 256K. EACH 64K COSTS \$70 ADDITIONAL.

CARTRIDGE-MAKER-64

CPG.....(R).....129.00.....NA
STORE PROGRAMS IN CARTRIDGE FORM FOR LATER USE WITH ALL ADVANTAGES OF THE MEDIUM. CARTRIDGES ARE \$25.00 EACH (16K ONLY).

INDUS GT

IND.....399.00.....*****
SLEEK, COMPACT, QUIET DISK DRIVE WITH SEPARATE POWER SUPPLY HAS NO VENTS IN TOP AND HAS A TRANSPARENT DOOR TO KEEP DUST OUT. HAS FRONT MOUNTED SWITCHES TO SELECT DRIVE NUMBER, WRITE PROTECTION, AND DISPLAY OF TRACK NUMBER OR ERROR CODE. (ON/OFF SWITCH IN BACK TO AVOID ACCIDENTAL SHUTOFF). FAST LOAD, FAST COPY, AND WEDGE FEATURES CAN BE LOADED FROM THE UNIT'S ROM OR THE DRIVE CAN BE USED WITHOUT ENHANCEMENTS AT THE SAME SPEED AS THE 1541. COMES WITH ENTRY LEVEL WORDPROCESSING, FILE MANAGEMENT, AND SPREADSHEET SOFTWARE IN A CARRYING CASE THAT DOUBLES AS DISK STORAGE.

SENSORY PERIPHERALS



CHIRPEE

ENM.....179.95.....NA
PHONETIC-BASED VOICE COMMAND MODULE USING MACHINE CODE CAN BE TRAINED TO RECOGNIZE SPOKEN COMMANDS FOR INPUT AS AN ALTERNATIVE TO KEYED ENTRY. SOFTWARE INCLUDED.

CABLES, GADGETS, ETC.



CASSETTE INTERFACE AND DUPLICATOR

DMX.....34.95.....NA
CABLE ALLOWS USE OF STANDARD CASSETTE RECORDER WITH COMMODORE COMPUTERS. ALSO CAN BE USED TO CONNECT TWO RECORDERS TO MAKE BACKUP COPIES. SWITCH FOR REVERSING POLARITY. ALSO JACK TO REMOTE START/STOP FEATURE IF YOUR RECORDER HAS IT.

DATAGUARD

CNI.....39.95.....NA
PROTECTS AGAINST DATA LOSS WHEN ANOTHER PHONE ON THE SAME LINE IS PICKED UP DURING MODEM OPERATION. SNAP IN LINE OR INSIDE PHONE VERSIONS.



MIRACOO-64

CRT.....52.00.....NA
BRUSHLESS, LINEAR-INDUCTION FAN PLUGS INTO (AND BLOWS INTO) USER PORT. DRAWS ITS POWER FROM THE COMPUTER. KEEPS CPU UNDER 100° F.

UNI-KOOL C-100

UNK.....39.95.....NA
COOLING FAN FOR DISK DRIVE (1540, 1, & 2) ALSO FILTERS OUT DUST. 115V 60HZ 7W.

THE PROTECTOR

RCP.....99.00.....NA
COOLING FAN WITH AIR FILTER SITS UNDER 1541 AND IS ABOUT THE SAME SIZE ENCLOSURE. ALSO HAS SURGE PROTECTED AND RFI FILTERED OUTLETS IN BACK.

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JUK.....995.00.....NA
40 CPS LETTER QUALITY AND GRAPHICS, TOO. 13" PRINT LINE, 3K BUFFER EXPANDABLE TO 15K. OPTIONAL TRACTOR OR CUT SHEET FEEDER.

AXIOM GP-550CD

AXI.....299.00.....NA
NLQ OR FASTER DRAFT MODE, MULTIPLE FONTS (CONDENSED, ITALIC, ETC.), GRAPHICS, 140 CHARACTER SET, TRIPPLICATE FORMS, FRICTION AND PIN FEED FROM BOTTOM, AND 10" WIDE PAPER CAPABLE. A DIRECT CONNECT VERSION CAN BE USED WITHOUT INTERFACE. ADD AT LEAST \$20.

HUSH 80 CD

ERS.....139.99.....NA
80 COLUMN, 80 CPS DOT MATRIX THERMAL PRINTER. COMES WITH 90FT PAPER ROLL, INTERFACE CABLE, AND POWER PACK.

PLOTTERS



MAXI-PLOT

MXP.....249.00.....NA
SAVE MONEY BY BUILDING ONE FROM PLANS (\$49.00), OR FROM A KIT (\$169.00). NO INTERFACE NEEDED. PLUGS INTO USER PORT. PROGRAMMABLE IN BASIC. USES MOST PENS AND MARKERS. 16X9 INCH PLOTTING AREA.

PLOTTING & PRINTER GRAPHICS



SCREEN-64

FRE.....(D).....29.95.....NA
SCREEN DUMP ANY SCREEN. COLORS BECOME SHADES AND PATTERNS. MOST DOT MATRIX PRINTERS WORK.

GRAPHICS SOFTWARE



CADPAK-64

ABA.....(D).....49.95.....NA
DESIGN PACKAGE REQUIRES HIGH QUALITY LIGHT PEN (NOT INCLUDED). LINE, RAY, CIRCLE, BOX, DRAW, FILL, COPY, AND UNDO ARE AMONG POSSIBLE COMMANDS.

VIDEO BASIC-64

ABA.....(D).....59.95.....NA
SPRITE AND TURTLE GRAPHICS, AUDIO COMMANDS, AND FEATURES TO AID IN WRITING GAME SOFTWARE.

INFORMATION SERVICES



PLAYNET

PLN.....(D).....34.95.....NA
TELECOMMUNICATION SERVICE FEATURING GAMES, BULLETIN BOARDS, ELECTRONIC MAIL, AND FILE TRANSFER. EVENING, NIGHT, AND WEEKEND HOURS ONLY. PRICE INCLUDES PROGRAM DISKS, USER'S MANUAL, NEWSLETTER, AND 90 MIN FREE TIME. AFTER THAT IT'S \$2/HR ON LINE AND \$6/MONTH SERVICE CHARGE.

PUBLICATIONS



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DISKS BY SUBSCRIPTION ON A MONTHLY FREQUENCY. DECEMBER PREMIER ISSUE INCLUDES A DATA BASE SYSTEM, A HOME FINANCE PROGRAM, A BASIC TUTORIAL, ARTICLES, 2 GAMES, MUSIC, AND MORE. 6 MONTHS AT \$54.95.

DISK MAGAZINE (C64 ONLY)

DSK.....23.00.....6.....**
BIMONTHLY MAGAZINE WITH A DISK INSIDE SO YOU DON'T HAVE TO TYPE IN THE PROGRAMS. IT APPEARS THAT THE QUANTUM LEAP PEOPLE ARE NOW IN THE MAGAZINE BUSINESS PROMOTING DISK BY INCLUDING THEIR PROGRAMS. THE PREMIER ISSUE WAS LITTLE MORE THAN PACKAGING, HOWEVER. PHOTOGRAPHY AND WRITING WERE DISAPPOINTING.

ROBOTICS



ARMROID 1

D&M.....NA.....NA
ROBOT ARM WITH THREE POINT HAND. 10 OZ. LIFT CAPACITY. MULTI-JOINT MOVEMENTS POSSIBLE. SOFTWARE CURRENTLY AVAILABLE. EXTERNAL CONNECTORS WITH SOFTWARE CONTROL.

NOMAD PERSONAL ROBOT

GCC.....179.95.....NA
TWENTY FIVE FOOT CORD FROM ROBOT PLUGS INTO USER PORT. SOFTWARE INCLUDED. ULTRASONIC DETECTOR BUILT IN. (BOX-WITH-WHEELS TYPE; NO ARM.)

NOMAD PERSONAL ROBOT EXTENDED BASIC CARTRIDGE

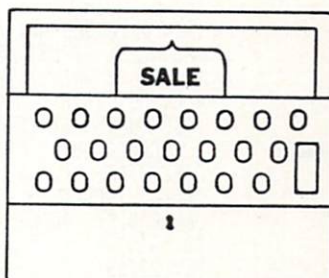
GCC.....(R).....39.95.....NA
FOR USE WITH NOMAD PERSONAL ROBOT ABOVE. ADDS ROBOT COMMANDS AHEAD, BACK, LEFT, RIGHT AND OTHERS TO BASIC.



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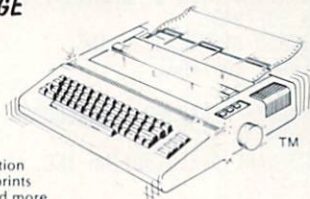
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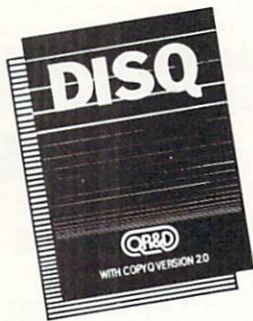
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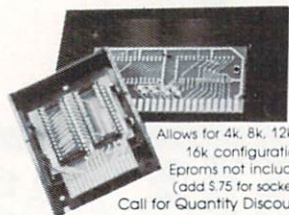
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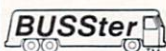
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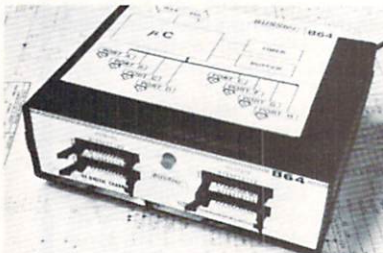


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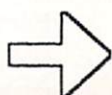
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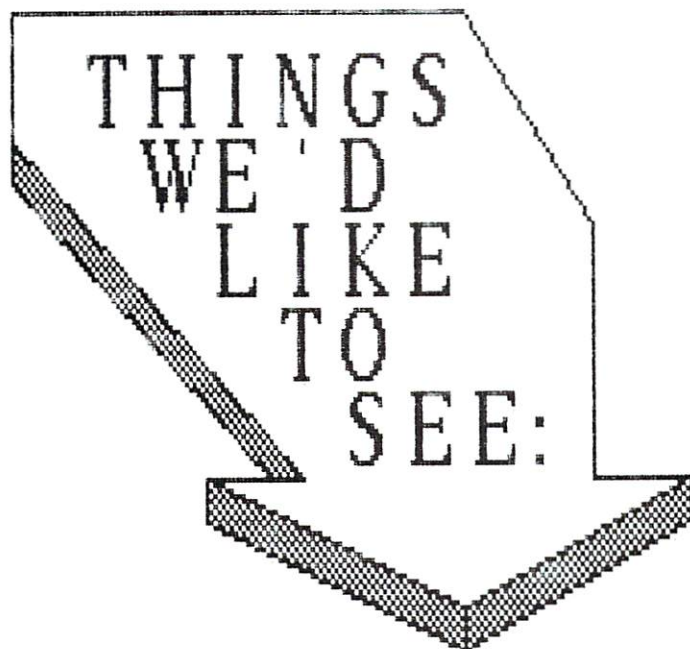
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* GAMES

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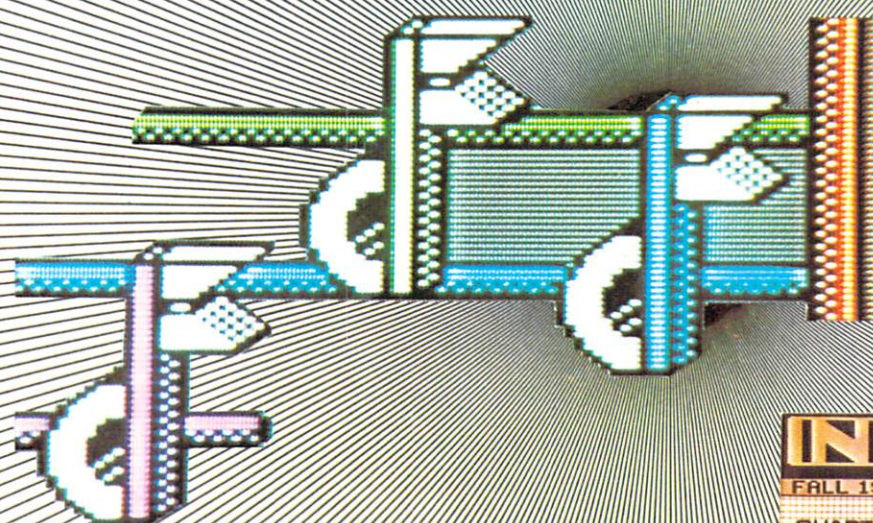
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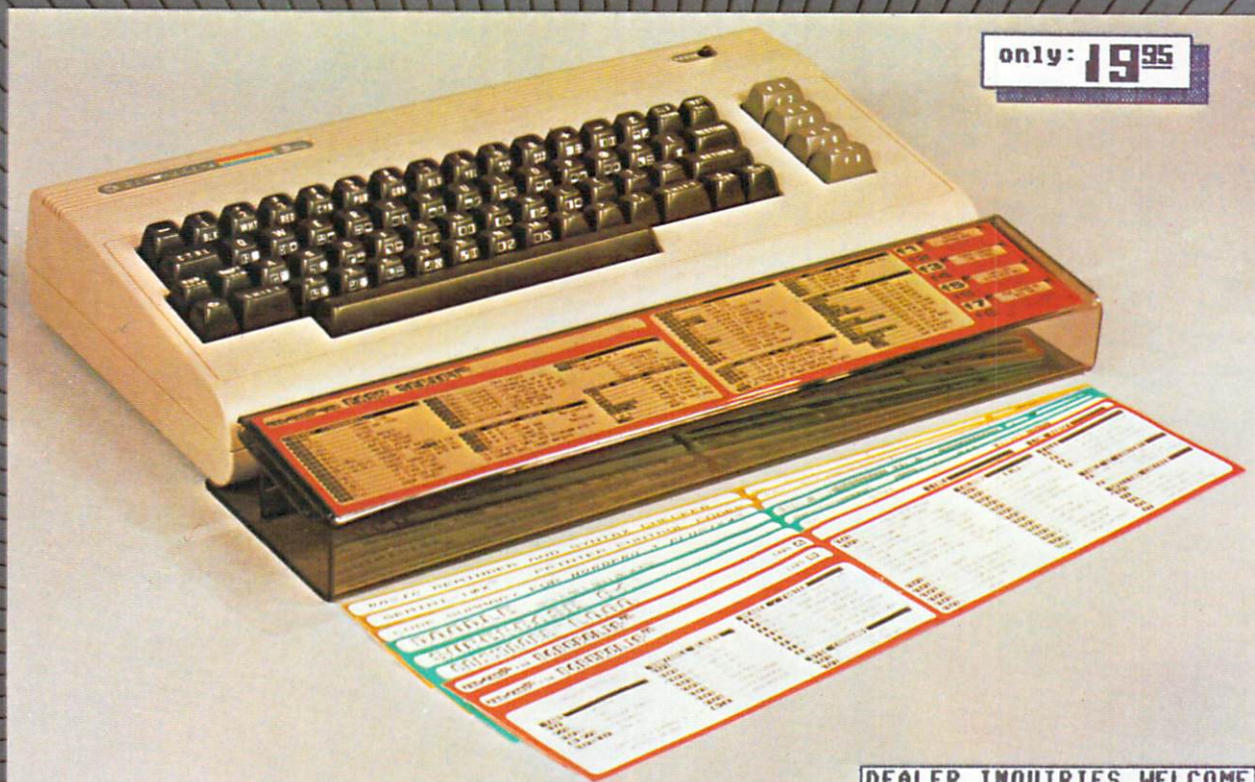
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